L. O. GAISER

CHROMOSOME NUMBERS IN ANGIOSPERMS IV

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BIBLIOGRAPHIA GENETICA X, 1933

The Hague, Martinus Nijhoff



CHROMOSOME NUMBERS IN ANGIOSPERMS IV

BY

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In preparing this annual publication of chromosome numbers in angiosperms, any papers published earlier than 1930 and not included in previous lists (GAISER 1926, 1930a, 1930b) have been first assembled in the supplement. Thus the main list consists entirely of reports published in 1930.

The same method of arrangement as had been used previously has again been followed here.

Reports of chromosome numbers published in 1931 and 1932 will be published pointly after the completion of the latter.

L. O. GAISER

CHROMOSOME NUMBERS IN ANGIOSPERMS III

Genetica XII, 1930

ERRATA

- Раде 176 Malus coronaria Mill., n = 34, 2n = 63, Nebel, 1929b.
 Malus prunifolia Borkh., 2n = 51 instead of 102, Nebel, 1929b.
- Page 185 Linum usitatissimum, n = 16 instead of 6, INOUYE, 1929.
- Page 188 Include Christoff, 1929 after Vitis riparia grand glabre.

 Vitis vinifera var. Grand noir d. la c., 2n = 38, Negrut, 1929 instead of 1928.
- Page 190 Seibel 28 should be Seibel 128.

 Insert Vitis Chasselas × Berlandieri 41B., 2n = 28, Negrut, 1929.

 Insert Vitis riparia × Gamay (Oberlin 595), 2n = 38, Negrut, 1929.
- Page 191 Insert for Vitis riparia × V. vinifera var. Gamay 595 Oberlin, 2n = 38, Negrul, 1929.
- Page 223 Panicum dichotomiflorum Michx. to P. scribnerianum Nasu are by Сниксн, 1929b instead of Rau, 1929a.
- Page 239 Omit n = 12 for Rhoeo discolor, Darlington, 1929e.
- Page 240 Hemerocallis fulva, clon Europa, chromosome number by Stout and Susa, 1929, Hemerocallis longituba and following by Takenaka, 1929.
- Page 243 Muscari species should be on page 242 before Yucca filamentosa.
- Page 245 Insert Iris susiana, 2n = 20, Simonet, 1929c.

For Iris Alberti Regel, n = 12 instead of 2n = 12, Simonet, 1929d.

CHROMOSOME NUMBERS IN ANGIOSPERMS II

Bibliographia Genetica VI, 1930

ADDITIONAL ERRATA 1)

Page 220 — Pirus malus var. Canadian Reinette, 2n = 51 instead of 15, Rybin, 1927a. Page 239 — Prunus nivea Miyashi, n = 16, Okabe, 1927, but n = 24, Okabe, 1928.

¹⁾ See also Genetica XII, 1930.

- Page 263 Insert Viola Humboldtii Tr. et Pl., n = 27, Heilborn, 1926. Insert Viola riviniana Rchb., n = 20, Clausen, 1927b.
- Page 289 Insert Primula Forbesii, n = 9, Sugiura, 1928a.

 Primula officinalis, n = 9, instead of 11, Marchal, 1920.
- Page 322 The two last species of Sambucus should be Lonicera alseuosmoides Graeb. and L. stabiana Guss., de Vilmorin & Simonet, 1927b.

 Bryonia dioica, n = 12 instead of 10, Strasburger, 1910c and Bryonia dioica Jacq, n = 10 instead of 12, Meurman 1925b.
- Page 324 Cucurbita pepo, n = 12 instead of 14, Lundegardh, 1914.
- Page 330 Calendula officinalis, 2n = 28 instead of 24, Lundegardh, 1909.
- Pages 390, 391 Lilium Kolpakowsiana Regeletc. to L. sp. (?) Murillo (hort.) should be Tulipa.
- Page 394 Chromosome numbers for Ornithogalum narbonense, O. nutans, O. pyrenaicum and O. umbellatum, Sprumont, 1928 should be in the 2n instead of the n column.
- Page 400 Insert 2n = 12, for Yucca glauca, Folsom, 1916.
- Page 411 Cypripedium insigne, 2n = 24—26 instead of 24—36, Heitz, 1926.
- Page 412 Ionopsidium acaule RCHB., n = 12, 2n = 24, CHIARUGI, 1928.

 " Savianum (CAR.) BALL., n = 16, 2n = 32, CHIARUGI, 1928 should be transferred to page 204 before Iberis amara.



Supplement CHROMOSOME NUMBERS IN ANGIOSPERMS TO YEAR 1930

DICOTYLEDONEAE

	n	2n	
URTICALES			
MORACEAE			
Humulus japonica Sieb. et			
Ζυος, δ	7+13 ¹), 6+15		Kimara, 1929b.
Humulus lupulus ♀		20	", 1929a.
Cannabis sativa L. var. Kara-			
$futo \dots \dots \dots$	10 2)		HIRATA, 1929.
Cannabis sativa L. var. Tochigi	102)		n 1 n
PROTEALES			
PROTEACEAE			
Grevillea macrostachya Brongn.			
et Gris	8		Messeri, 1923.
CENTROSPERMAE			
CHENOPODIACEAE			
Beta vulgaris		18	Окѕіјик, 1927.
SARRACENIALES			
DROSERACEAE			
Drosophyllum lusitanicum Link		12	Венке, 1929.
Dionaea muscipula Ellis		32	33 2)
Dionaea muscipula	15		Smith, 1929.
Drosera			,
Section Rossolis			
Drosera anglica		40	BEHRE, 1929.
" capensis L		40	

¹⁾ In the male plants there are usually 7 pairs of autosomes and a tripartite sex chromosome $(y_1 \times y_2)$. In one male plant there were found 6 bivalents and a pentapartite chromosome complex consisting of a pair of autosomes and the 3 sex chromosomes $(y_1 \times y_2)$:

somes (y₁ s s x y₂):

2) In the male and male intersexual plants there occurred an XY pair of chromosomes and in the female and female intersexual plants an XX pair.

DROSERACEAE (continued) Drosera (continued)	n	2n		
Section Rossolis (continued	7.			
Drosera intermedia	1)			
" rojundijolia		20	Венке, 1929.	
		20	" "	
" spathulata Labill Section Ptycnostigma		80	22	
Drosera cistiflora		60	" "	
Droscra binata Labili				
Section Psychophila		32	22 12	
Droscra regia		34	" "	
Drosera pygmaea D. C	probabl	y 32	12 23	
ROSALES				
PITTOSPORACEAE				
Pittosporum Tobira	12		Schürhoff,	19296.
LEGUMINOSAE				
Lupinus mutabilis		42	Milovidov, 1	926.
Medicago sativa		32	Elders, 1926	
Melilotus alba		16	,, ,,	
Melilotus alba annua		16	,, ,,	
Melilotus officinalis		16	" "	
Vicia amphicarpa		10	Sveshnikova,	, 1929.
" angustifolia brachisomica		12	,,	,,
" angustijolia dolichosomica		12	,,	
" cracca (one race)		14	,,	1,
" cracca (another race)		28	23	,,
" sativa		12	<i>n</i>	"
" angusti/olia brachisomica				
× V. angustijolia doli-				
chosomica		12	13	3,
,, cracca $(2n = 14) \times V$.				
cracca (2n = 28)		21	**	,,
,, cracca $(2n = 12) \times V$.				
$cracea (2n = 14) \dots$		13	"	,,
" sativa × V. amphicarpa		11	,,	"
., sativa $ imes V$. angustifolia brachisomica				
4 P		12	"	"
" satīva × V. angustifolia dolichosomica		10		
, sativa \times V . macrocarpa .		12	<i>,,</i>	,,
		12	**	,,
GERANIALES	n	2n		
LINACEAE				
Linum alpinum Jacq	18	36	Кікисні, 1929.	

LINACI	EAE (continued)	n	2n		
	(continued)				
	и altaicum Fisch. (from				
	Delft)	9	18	Кікцені,	1929.
,,	americanum L. (from	·			
,,	Tabore)	15	30	22	**
,,	angustifolium Huds.			,,	"
"	(from Holland)	15	30	,,	**
,,	austriacum L. (from			,,	"
,,	Trieste)	9	18	,,	33
,,	corymbije um Desf.			**	,,
,,	(from Tabore)	15	30	,,	"
. ,,	extraaxillare Kit. (from			,,	,,
. "	Switzerland)	9	18		,,
,,	flavum L. (from Am-			,,	,,
,,	sterdam)	15	30		
,,	hologynum Reichb. (from			**	11
"	Lithuania)	9	18		,,
**	Lewisii Pursh. (from			,,	,,
,,	Tabore)	9	18		,,
	monogynum Forst	43?	86?	"	,,
"	muelleri Moris (from			11	***
,,	Edinburgh)	9	18		
,,,	narbonense L. (from	•		.,,	"
,,	Amsterdam)	9	18		
,,	perenne L. (from Tries-	,		**	11
**	te)	9	18		
,,	sibiricum DC. (from	•		"	73
"	Sutton)	9	18		
12	usitatissimum L. (from	,		"	n
,,	Sapporo)	15	30		
,,	alpinum Jacq. × L. per-	.0	30	,,,	23
,,	enne L. F_1	9+91	27		4
		2 T 71	21	"	"
,,	alpinum Jacq. × L. pcr-	2			
"	enne L. F ₂		20, 28, 34		
RUTAC	-		20, 20, 04	"	23
Citrus	sinensis var. Shamouti .	9		Opposition	8. Fr 1000
	RBIACEAE	,		OPPENHEI	M & FRANKEL, 1929
	rialis annua	8 1)		Camirona	1000
	rbia dulcis L	14			valdówna, 1929.
		1.1		Carano, 1	740.
SAPIND.					
	MINACEAE				
1 mpat	iens Balsamina	7		KANNA, 19	926.
¹) One	pair of chromosomes was	very sm	iall		

¹⁾ One pair of chromosomes was very small.

CHROMOSOME NUMBERS IN ANGIOSPERMS TO YEAR 1930

Sassypium herbaceum 52—56 Vukovic & Glisic, 1929.	MALVAI MALVA		n	2n .
MYRTIFLORAE OENOTHERACEAE Oenothera biennis				52—56 Varrouse 6 C
fallax 14 2 HÅKANSSON, 1928	MYRTIF	LORAE		oo vokovic & Glisic, 1929.
Takansson, 1928.	Oenoth	era biennis		Tuda, 1929.
	,,	fallax		Håkansson, 1928.
Innated F ₁	,,	gigantea (diploid)		$oldsymbol{u}$
Lamarckiana 14 2 Hâkansson, 1923; Tuda, 1925	,,			
lata				GERHARD, 1929.
" ochracea (self-pollinated F_1)	**	Lamarckiana		Håkansson, 1928; Tuda, 1929.
ated F ₁)	0			Håkansson, 1923.
### ##################################	**	ochracea (self-pollin-		
" pullu			7	GERHARD, 1929
Tubrisepala 14 5	"	pulla		
" rubrisepala	"	rubrinervis 1 and 2 .		n n
" " " " " " " " " " " " " " " " " " "	"	rubrisepala	14 5)	n n
" stricta	"	rubristachys	-	v = v
$\frac{14^{-1}}{2}$ biennis × O. biennis $\frac{14^{-1}}{2}$ Tuda, 1929. $\frac{1}{2}$ biennis × O. cruciata $\frac{14^{-1}}{2}$	"	sinuata		TUDA, 1929.
cruciata $\frac{14^{-1}}{2}$ TUDA, 1929. biennis × O, cruciata $\frac{14^{-1}}{2}$,,	stricta	-	Håkansson, 1928.
, biennis × 0, cruciata $\begin{bmatrix} 2 \\ 14 \end{bmatrix}$,,		_	
" biennis × O. cruciata 14 ¹)				Tuda, 1929.
2	"			D ,
" biennis × O, Lamar-	"			
ckiana		ckiana		n n

¹⁾ Arranged as a ring of 6 plus a ring of 8 chromosomes.
2) Arranged as a ring of 12 plus 1 pair of chromosomes.
3) Arranged as a ring of 13 plus 1 pair of chromosomes.
4) Arranged as a ring of 6 plus 3 pairs plus 1 trivalent chromosomes.
5) Arranged as a ring of 6 plus 4 pairs of chromosomes.
6) Arranged as a ring of 14 chromosomes.
7) Arranged as a ring of 6 plus a ring of 8, as a ring of 12 plus one pair etc.

OENOTHI	ERACEAE (continued)	n	2n		
	a biennis × 0. sinuata	14 1)		Tuda, 1929	
29	Cockèrelli \times O. gran- diflora Γ_2 curtitrun-				
	cata	14 2)		GERHARD,	1929.
25	grandiflora $ imes$ 0.				
	biennis F2				
	rubiacuta	$\frac{14^{-3}}{2}$		+>	"
	rubitruncata	$\frac{14^{-2}}{2}$		17	"
,,	grandiflora \times 0.				
,,	cruciata F ₂				
	flexitruncata	$\frac{14}{2}$ 4)		.,	**
	semigigas	$\frac{21}{2}$		**	
33	grandiflora × 0.				
"	Hookeri F.				
	No. 1	$\frac{14^{-5}}{2}$,,,	4
	No. 7	7		,,	,.
,,	grandiflora $ imes$ 0, mu- ricata F_2				
	curvitruncata	14 ³)		n	**
32	grandi/lora × 0. sua-				
	veolens F2				
	flaviacuta	14 °)		"	"
	flavitruncata	$\frac{14}{2}$ 7)		"	**
,,	Lamarckiana × O.				
	biennis cruciata	$\frac{14^{-7}}{2}$		Tuda, 1929	

See foot-note 1 page 111.
 See foot-note 6 page 111.
 Arranged as a ring of 10 plus 2 pairs of chromosomes.
 Arranged as a ring of 10 plus a ring of 4 chromosomes.
 Arranged as a ring of 8 plus 3 pairs of chromosomes.
 Arranged as a ring of 4 plus 5 pairs of chromosomes.
 See foot-note 2 page 111.

OENOT Oenother	HERACEAE (continued) a (continued)	n	2n		
	tera Lamarckiana × 0.				
	grandiflora F.				
	acutilaeta	14 1)		-	
	· · ·	$\frac{14}{2}$	(Gerhari), 1929.
	aculivelutina	∠ 14 ²)			
		2		23	9
	truncovelutina	14 ²)			
		2		12	**
	No. 6	$\frac{14^{-3}}{2}$		39	19
	No. 9	7			
	No. 12	7			"
2.8	muricata × 0. gran-			11	13
	diflora F ₂				
	rigidiacuta	14 ⁴)		,,	- 27
	rigiditruncata	14 5)		,,	11
"	sinuata × 0. biennis	14 5)	T	'UDA, 192	29.
,,	sinuata × 0. Lamar-	. 2			
	ckiana	14 °)		,, ,,	
12	suaveolens × O. gran-	۷			
	diflora F.				
	albiacuta	14 ¹)	G:	ERHARD,	1929.
	albitruncata	14 7)		,,,	,,
PRIMULA	I EC	2			
PRIMULA					
rrmuu	jesoana	13		IYAJI, 19	
	malacoides	9	K	OBEL, 19	27.
	malacoides (gigas)	18		1, ,	,
0011700	malacoides (one plant)	17	34	,, ,	j
CONTORT					
	ADACEAE				
	ium acutum	9	F	RANCINI,	1927.
1) See fo	ot-note 3 page 112.				

²⁾ Arranged as a ring of 6 plus a ring of 4 plus 2 pairs of chromosomes. 2) Arranged as a ring of 6 plus a ring of 4 plus 2 pairs of enromosomes.
3) See foot-note 7 page 112.
4) Arranged as a ring of 8 plus a ring of 4 plus 2 pairs of chromosomes.
5) See foot-note 6 page 11I.
6) Arranged partly as a ring of 10 plus a ring of 4 chromosomes.
7) See foot-note 2 page 111.

Bibliographia Genetica X

TUBIF	LORAE	n	2n			
POLE:	MONIACEAE					
Phlo	x divaricaia	14		KELLY &	è Wanl.	1929
21	Drummondi	1.4		,,	,	
**	glaberrima	14		,,	,,	.,
,,	maculata	1.4			,,	11
2.8.	ovata	14		.,	"	
22	paniculata	14		**	,,	,,
	pilosa	14		12	12	,,
,,	stolonifera	14		.,	,,	,,
"	subulata	14		••	,,	,,
LABIA	TAE			.,	,,	
Ment	ha aquatica	18		Schürho	FF. 1929	ы.
,,	arvensis	36		11	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
"	canadensis	27		,,		
2)	piperita	18		,,		
***	rotundițolia	27? 1)		,,	,,	
,,	silvestris	9		"		
.59	verticillata	27			**	
23	viridis	13		"		
SOLAN.	ACEAE			*1	**	
Dature	a metel L	12		GLISIC, 19	28	
Nicotie	ana Bigelovii	24		CHRISTOF		
,,	glutinosa	12		.,		
,,	longiflora	10		"	13	
,,	nudicaulis	24			**	
19	paniculata	12		"	**	
,,	plumbaginifolia	10			• •	
,,	sylvestris	12		22	**	
,,	suaveolens	16		2.9	19	
,,	Tabacum var. ma-			-21	,,	
	crophylla	24				
.,,	trigonophylla	12		**	31	
1)	Eigelovii imes N. $nudi-$			17	**	
	caulis	48				
		2		,,	1,	
,,	Bigelovii $ imes N$. Taba-	₩				
	cum var. macrophylla	48				
	• •	2			,,,	
37	glutinosa \times N. nudi-	2				
	caults	36				
		$\frac{3}{2}$		+5	**	
		4				

 $^{^{\}rm 1})$ The chromosomes have not been counted in this form but he estimated them to be 27.

		THE STATE OF THE S	D165 1.4 7.	NGIOSE	ERMS 10 1	EAR 19	30 113
Š	SOLANAC	EAE (continued)	IJ	2n			
-	Vicotiana (continued)					
	Nicotian	a nudicaulis $ imes N$. tri-					
		gonophylla	36		CHRISTOF:	F, 1929.	
	1)	paniculata × N. glu-					
		tinosa	24 2		27	**	
	,,	suavvolens × N. lon-					
		gijlora	$\frac{26}{2}$		1)	1)	
	,,,	suaveolens \times N.					
		plumbaginitolia	26 2		n	"	
	1)	Tabacum var. ma-					
		crophylla × N. glu-					
		tinosa	$\frac{36}{2}$		<i>p</i>	,,	
	,,	Tabacum var. ma-	-		,,	,,	
		crophylla × N. syl-					
		vestris	$12 + \frac{12}{2}$		"	**	
S	CROPHU:	LARIACEAE					
	Pentsteme	on laevigatus		96	La Cour, 19	929.	
C	AMPANUI	LATAF			,		
	OMPOSIT	AE					
	Crepis rei	uteriana ,	4		Вавсоск 1929.	& Hor	LINGSHEAD,
		MONC	COTYL	EDON	EAE		
	LUMIFLO RAMINE		11	2n			

GLUMIFLORAE	n	2n		
GRAMINEAE				
Avena barbata Pott	14		NISHIYAMA	, 1929.
" byzantina С. Косн	21		,,	,,
" jatua L	21		,,	
" sativa L	21		,,	22
" sterilis L	21		,,	77
" strigosa Schreb	7		"	,,
Avena hybrids				
Avena barbata Pott. $ imes$ A.				
strigosa Schreb	7-91)	21	,,	,,
" barbata Pott. $ imes$ A.				
fatua L	2-11 2)	35	1,1	,,

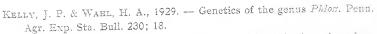
This number included 0—3 trivalents and occasionally a tetravalent.
 Frequently 1—4 trivalents were found.

GRAMINEAE (continued)	n	2n		
Svena hybrids (continued)				
Avena barbata Pott. × A.				
sterilis L	7—13 1)	35	NISHIYAM	A, 1929.
,, jatua L. × A. sativa L.	21^{-2})		2.9	+1
., fatua L. × A. sterilis L.	21 2)		,,,	,,
" sativa L. × A. byzan-				
tina С. Косн	21 2)		**	**
" sterilis L. × A. byzan-				
tina С. Косн	21 2)		,,	**
Arrhenatherum avenaccum		ca 40	DAVIES, 1	927.
Dactylis glomerata	14	28	11	
Triticum compactum creticum				
× T. vulgare lutescens (Mar-				
quis) F3 progeny normal	21	42	Vasiljev,	1929.
heterozygous speltoids	$20+1_{1}$	41	**	11
homozygous speltoids		40	13	>>
(Triticum polonicum \times T. spel-				
ta) F4 F5 (Kihara's dwarfs				
lacking f or g chromosomes) .	20		Wakaku	wa, 1929.
(Kihara's dwarfs n = 20				
crossed) F_1	$19 + 2_1$		1)	11
	2			
(Kihara's dwarfs $n = 20$				
crossed) $F_2 \dots \dots$	19,19+1	1.5		
	$19+2_1$,			
	2			
	20,20+1,			
	21		"	23
(Kihara's dwarfs 2n = 39				
crossed) progeny	$19, 19 + 1_{1}$			
	20		***	13
Hordeum sativum Jess	7		INOUYE, 1	.929.
LILIIFLORAE				
LILIACEAE				
Colchicum autumnale	7		FURLANI,	
Lilium Matimowicsii Regel	12		Sisa, 1929	
Fritillaria persica L	12		Вамвасто	oni, 1928.
MICROSPERMAE				
ORCHIDACEAE				
Nigritella nigra Rснв	19		Chiarugi	, 1929.
" rubra Rcнв	19		,,	
and the second s				

Frequently 0—4 trivalents were found.
 Irregularities occurred as members of a pair remained separate as univalents or united with another bivalent to form trivalents.

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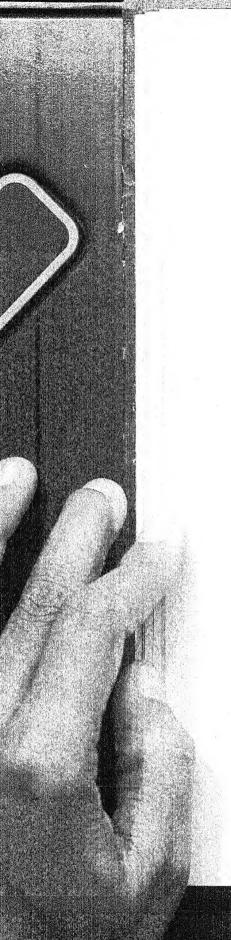
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CHROMOSOME NUMBERS IN ANGIOSPERMS IV

DICOTYLEDONEAE

PIPERALES	B	2n		
SAURURACEAE				
Houttuynia cordata 1)		94—98	Окаве, 1930.	
GARRYALES				
GARRYACEAE				
Garrya elliptica	11		MEURMAN, 1930.	
JUGLANDALES				
JUGLANDACEAE				
Juglans cinerea L	16		Woodworth, 193	Ĵυ.
" mandshurica MAXIM	16		12	
" nigra L	16		33 23	
" regia L	16		15 21	
" rupestris Engelm	16		31 23	
" Sieboldiana var. cordi-				
· jormis Mak	16		u v	
× " notha Rehd. (J. Siebol-				
diana $ imes J$. $regia)$	16 °)		p 21	
Carya alba К. Косн	32			
" cordiformis K. Koch	16		12	
" glabra Sweet	32		21 17	
" laciniosa Loud	16		0 0	
× " Laneyi var. chateauga-				
yensis Sarg	16 ³)		13	
" ovalis Sarg	32		2) 1)	
" ovata K. Koch	16		,, ,,	
× Pterocarya Rehderiana				
Schneid. (P. fraxinifolia				
\times P. stenoptera)	164)		39 3:	,

Reduction division in the pollen-mother-cells was very irregular. In the embryosac mother-cell there were either many bivalents with some univalents or all the chromosomes appeared as univalents and no reduction of number followed.

 Meiosis was very irregular.

<sup>a) Meiosis was not normal.
d) Meiosis was irregular.</sup>

FAGALES BETULACEAE	n	2n	
Carpinus betulus L	ŝ		Woodworth, 1930b; Jaretz ky, 1930.
" betulus var. fastigiata			
Nichols	32		Woodworth, 1930b.
, caroliniana Walt	3		, , , , , , , , , , , , , , , , , , , ,
corduta BL	3 1)		
" japonica Bl	8		9 0
" laxiflora BL	3		
orientalis Mill	3		2
" turczanininovii HAN-			
" CE	S		., ., ., .,
Ostrya carpinifolia Scop	8		" "; JARET
			ку, 1930.
japonica SARG	8		Woodworth, 1930b.
" virginiana K. Koch	3		23
" virginiana var. glandu-			
losa Sarg	8		12 25
Ostryopsis davidiana DCNE	3		22 22
Corvbus americana Mill	11		JARETZKY, 1930.
" avellana L	11		12 19
" maxima Mill	11		12 23
,, rostrata Air. var. mand-			
shurica Maxim	10 or 11		9 21
Betula humilis Schr	14		7) 23
, lutea Michx. (from			
Minn.) 2)	42		WOODWORTH, 1930b.
, nana L	14		Jaretzky, 1930.
" papyrijera var. kenaica			
HENRY	35		Woodworth, 1930b.
" papyrifera var. occiden-			
talis SARG	42		" "
" papvrifera var subcor-			
data Sarg	28		12 0
" þumila var, glandulifera			
REGEL	28		22
" urticijolia Regel	28		Jaretzky, 1930.
" utilis var. prattii Burk.	14		Woodworth, 1930b.
× " purpurii Schneid. (B.			
lutca \times B. pumila var.			
glandulifera)	45 3)		23

¹⁾ Meiosis was very abnormal. Some of the chromosomes did not pair in diakinesis.
2) Betala lutea reported on by Woodworth, 1929a (see Gaiser, 1930b) came from Massachusetts (U. S. A.)
3) Meiosis was very abnormal.

BETULACEAE (continued)	n	2n		
Alnus cordata Desr. var. ge- nuina Regel	21		JARETZKY	, 1930.
Alnus glutinosa var. vulgaris				
Spach	1-4		1)	13
Alnus incana Moench	14		11	11
Alnus japonica Sieb, et Zucc.	23 1)		; 1	17
Alnus rubra Bong	1 4		21	0
Alnus rugosa (Du Roi) Spreng.		28 °)	Woodwor	ти, 1930а
Alnus subcordata C. A. Mey .	21 3)		JARETZKY	, 1930.
Almus viridis (Chaix.) DC	14		,,	**
FAGACEAE				
Fagus silvatica L		24))	12
Castança sativa MILL.	12 4)		,,	,,
1 1 1 D	12		"	.,
,,			.,	
Quercus Subgenus Lepidobalanus				
	12		SAX, H. J.	1930.
Quercus alba	12	12	FRIESNER,	
" alba L	12	12	SAN, H. J.	
,, bicolor				
" macrocarpa	12±1	10	11 11 11	
" macrocarpa Michx		12	FRIESNER	
" mongolica	12 ± 1		Sax, H. J	
" montana	12		11 () 11	13
" muhlenbergii	12		23 22 11	11
" muhlenbergii Engel 5).		12	FRIESNER.	. 1930.
Subgenus Erythrobalanu:	3			
Quercus exacta	12		Sax, H. J.	, 1930.
" imbricaria	12		,, ,, ,,	
× " Leana	12 ± 1		,, 1, 2,	.,
× " ludoviciana	12 ± 1		11 21 12	10
" palustris	12			,,
" palustris Du Roi		24	Сигмри, 1	
× ,, velutina	12 + 1		Sax, H. J.	
" velutina Lam		12	FRIESNER,	
Quercus (unclassified as to sub-				,
Quenus haralia manima Acurré		12	FRIESNER.	1930
Quercus borealis maxima Ashe ⁶)		12	PRIESNER,	, 1750.

nsisting of 3 fused units.

²⁾ This number was determined in the ovule where no reduction division was found to occur (embryos arising from parthenogenesis).

3) Meiotic divisions were more or less irregular.

⁴⁾ Equatorial plates showing 10 and 11 chromosomes were explained as having been the result of fusion of chromosomes.

⁵) Mitotic chromosome behavior was somewhat abnormal.

⁶) Mitotic chromosome behavior was slightly abnormal.

TACARTAR (Round)	•0	2n	
FAGACEAE (continued) Ouercus (continued)	n	211	
Ouerous cerris L		24	GHIMPU, 1930; JARETZKY. 1930.
		24	GHIMPU, 1930.
coccinea Muench. 1)		12	Friesner, 1930.
"	10	12	
" coccinea Wangenh	12		JARETZKY, 1930.
Dalechampii Ten	12		*1
" glandulifera Br	12 ª)		37 17
" ilea Linn		24	Gнімри, 1930.
" Kochnii (Q. ilex \times Q.			
sussilis)		24 3)	Jaretzky, 1930.
" Libani Oliv	12		77
" macranthera Fisch. et			
MEY	12		22
" marilandica Muench.		12	FRIESNER, 1930.
" Michauxii Nutt. 4) .		12	n
" inigra L		24	Jaretzky, 1930.
" pontica K. Koch	12 2)		22
" prinoides Willd		12	FRIESNER, 1930.
" Prinus L		12	33 31
" robur L	12		JARETZKY, 1930.
" sessilis Eurii	12		
suber LINN		24	Gнімри, 1930.
,,			
URTICALES			
ULMACEAE			
Ulmus montana With	14		Krause, 1930.
MORACEAE			
Humulus japonicus S. et Z 7	+13 5)	16, 17,	
		32 °)	Tuschnjakowa, 1930.
Dorstenia argentata Hook	14		Krause, 1930.
" Barteri Bur	12		12 23
., contrajerva L	15		12 22
" convexa de Wild	12		21 72
., multiformis M1Q. var.			
arifolia	16		23 22
" multiformis Mig. var.			
Ceraiosanthes	16		.,, .,,

1) Mitotic chromosome behavior was somewhat abnormal.

²⁾ Equatorial plates showing 10 and 11 chromosomes were explained as having been the result of fusion of chromosomes.

<sup>been the result of rusino of chromosomes.
Judged by meiotic divisions where 13 or 14 chromosomes were found and it was thought that several univalent chromosomes were present.
See foot-note 6 page 122.
The trivalent chromosome is represented as a + b₁ + b₂.</sup>

⁶⁾ Tetraploid cells occurred occasionally in the diploid plants.

MORACEAE (continued)	n	2n
Dorstenia (continued)		
Dorstenia plumariacjolia Fisch.		
et Mey	13	Krause, 1930.
Psilurus Welw	14(?)	13
" yambuyaensis DE		
Wild	12	23 27
Brosimum Alicastrum Sw		26 .,
Ficus elastica RONB		26(?) " "
, panduraefolia VILL		26(?) " "
" Schlechteri		26(?) " "
Cecropia peltata L		26(?) " "
URTICACEAE		
Uttica caudata Vahl. (Urtica		
membranacca Poir.)	12	24 Negodi, 1930.
Pellionia Daveauana Br	13	KRAUSE, 1930.
Boehmeria biloba WEDD		28(?) " "
Parietaria judaica L	13	"
officinalis L		14 ,, ,,
" officinalis L. var.		
angustifolia L	7	"
POLYGONALES		
POLYGONACEAE		
Rumex acetosa 5		15 ¹) Ono, 1930a.
andres 0		14 2) ,, .,
, acetosa (intersex.)		15 3) ONO, 1930a, b.
,,		22 4) ,, ,, ,,
		29 5) ,, ,, ,,
" acetosa (offspring of tri-		, ,
ploids and intersexual		
plants)		15, 16,
F144-1-1, V - 1 - 1 - 1		20 6) ,, ,, ,,
acetosella (intersex.)	20+11	41(?) Ono, 1930b.
montanus 3		15 1) ,, ,,
and production to the C		14 2) ,, ,,
" momunus *		, ,, ,,
Name and the second contract of the second s		

¹) The complex is written 15 = x + 2y + 12a.
²) The complex is written 14 = 2x + 12a.

³⁾ The complex is written 15 = x + 2y + a' + 11a. The a' chromosome is one of a heteromorphic pair, apparent in certain division stages.

⁴⁾ The complex is written 22 = 2x + 2y + 18a or 2x + 2y + a' + 17a, of which those having the a' chromosome show greater degrees of intersexualism. Of four other plants showing marked intersexualism the complex was 2x + 3y + a' + 16aor 2x + 2y + 3a' + 15a.

⁵⁾ The complex is written 29 = 3x + 2y + 24a.
6) The complex is written 15 = x + 3y + 2a' + 9a or 2x + 13a; 16 = x + 2y + 2a' + 3a. 13a; and 20 = 2x + y + 17a.

POLYGONACEAE (continued)	n	2n
Rumex (continued)		
Rumex montanus (intersex.) .		22 ¹) Ono, 1930b.
" montanus Desf. o		15°) Takenaka, 1930.
" montanus Desf.♀		14 2)
" papilio Coss. et Bal	9	Ono, 1930c.
" scutatus var. typicus	20	Fikry, 1930.
"		,
CENTROSPERMAE		
CHENOPODIACEAE		
Beta patellaris	9	BLEIER, 1930b.
,, vulgaris	9	n
	9	18 LEVINE, 1930.
" vulgaris (Crown Gall tis-		
sue)		13, 36,
		72 3) ,, ,,
PORTULACACEAE		
Portulaca grandiflora LINDL	9	TJEBBES, 1930.
CARYOPHYLLACEAE		
Silene inflata Smith		24 4) Blackburn & Boult, 1930.
" tatarica Pers		24 4) ,, ,, ,, ,,
Vaccaria segetalis (NECK.) GAR-		
CKE	15	30 ,, ,, ,, ,,
Dianthus allwoodii Horr		90 Shibukawa, 1930.
" Armeria		30 Ishii, 1930.
, atrorubens		90 ,, ,,
" barbatus		30 " "
" chinensis		30 " "
" ahin main T	15	30 Shibukawa, 1930.
" compactus		90 Ishii, 1930.
, cruentus		30 " "
Jantanus		30 " "
		30 " "
fun man and		90 "
file alterni		00
inhonious		20
Indivintua		10
" latitolius Hort		60 Shibukawa, 1930.
"		90 Isnn, 1930.
" liburunicus		00
" orbelicus		90 " "

¹⁾ The complex is written 22 = 2x + 2y + 18a.
2) At heterotypic metaphase 6 gemini + 1 tripartitic chromosome were observed. Thus the complex is written $2n = 12a + x + Y_1 + Y_2$; 2n = 12a + 2x.
3) Tetraploid cells were more numerous than octoploid cells, but diploid cells were the most numerous.

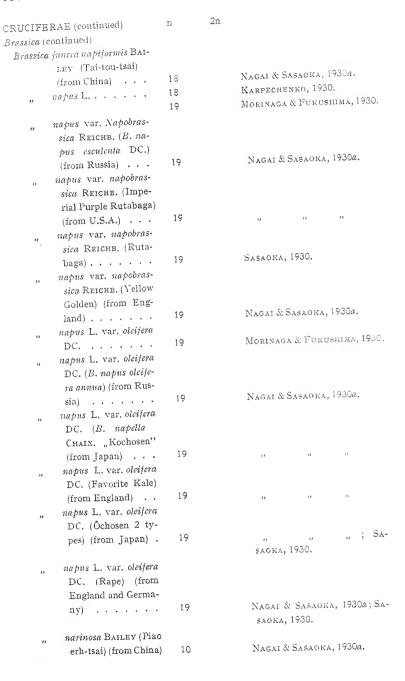
⁴⁾ By figure of somatic plate from root-tip.

CARYOPHYLLACEAE (continued)	n	2n				
Dianthus (continued)						
Dianthus pallens		90	Ізни, 19	30.		
" petracus		90	,, ,)		
" pubescens		90	,,	,		
racemosus		90	,,	,		
,, squarrosus		90	,,	3		
" subjastigiatus		30	**	,,		
" sylvestris		30	**	,,		
, Velenowskyi		30	**	,,		
" versicolor		90	23	,,		
" wimmeri		60	**			
Saponaria 1)						
I. Saponariella						
1. Smegmathamnium						
Saponaria caespitosa D.C.	14	28	Вьаскв	urn &	Boui	л, 1930.
" lutea L		28	,,	,,	23	33
" Pumilio Fenze.		28	23	**	21	27
2. Kabylia						
Saponaria glutinosa Bieb.		28	17	1)	,,	,,
3. Bootia						
Saponaria calabrica Guss.	14	28	33	3)	,,	"
" ocymoides L	14		,,	"	27	į s
,, officinalis L	14	23	**	"	27	17
" pulchella hybrid	14		13	"	13	12
II. Saporh izaea						
2. Silenoides						
Saponaria ccrastiodes						
Fisch	14	23	13	13	**	17
RANALES						
RANUNCULACEAE						
Clematis virginiana	8		LINDSA	y, 1930		
BERBERIDACEAE						
Diphylleia Grayi Fr. Schom		12	MIJAYI,	1930b.		
Podophyllum pleianthum HAN-						
CE		12	,,	,,		
Nandina domestica Thunb		20	,,	11		
Epimedium macranthum Morr.						
et Decne. var. violaceum						
Franch		12	11	٠,		
Ranzania japonica T. Ito		14	21	,		
Jettersonia dubia Maxim		12	n	13		
MENISPERMACEAE			.,			
Menispermum canadense	26		LINDSA	r, 1930		
1) Arrangement is according to S	IMMLER	(1910).				

CALVCANTHACEAE	п	2n			
Calycanthus	12	24	Brofferi	1930.	
RHOEADALES					
PAPAVERACEAE					
Eschscholtzia californica	6		LAWRENC	е, 1930.	
, molle	8		19	13	
Papaver Rhoeas	7		,,,	**	
Corydalis cava	8		11		
CRUCIFERAE					
Ionopsidium acaule (Desf.)					
Rетонв	12		Corti, 19	305.	
" Savianum (CAR.)					
Ball, ex Caruel	16		,,	,,	
Iberis pinnata	8		LAWRENC	E, 1930b	
Brassica alba RABH. (white					
mustard) (from U.S.A. and					
England)	12		Nagai &	Sasaoka	, 1930a.
Brassica alba Rabh. (B. nigra)					
(from Switzerland)	12		,,	,,	12
Brassica alba Rabh. (Sinapis					
alba) (from Germany)	12		3)	,,	"; 1930Ъ.
Brassica arvensis RABH. (B. ar-					
vensis) (from U.S.A.)	9		,,	7.5	1930a.
Brassica arvensis Rabh. (Sina-					
pis arvensis) (from Germany)	9		,,	,,	1)
Brassica campestris L		10	KARPECH	ENKO, 19	930.
, campestris L. var. aj-					
ghanica	10		Nagai &	Sasaoka	., 1930 <i>b</i> .
" campestris L. var. al-					
taica	10		,,	,,	,,
" campestris L. var. cau-					
casica	10		12	17	**
" campestris L. var. ka-					
bulica	10		24	,,	**
" campestris L. var. vul-					
garis	10		13	12	"
" campestris L. (Sawi					
" Biji)	10		.,		"
" campestris L. (Tamba-					
na) (from Japan)	10			,,	1930a.
, campestris L. (B. glau-					
,, ca)	10		,,	13	1930b.
, campestris L. (two					
other types)	10		**	,,	,,
" carinata Braun	18		,,	,,	"
*			••		

			2n.				
CRUCIFE	RAE (continued)	D,	المك				
Brassica (c	ontinued)	1.7		MORINAGA	& FUKU	SHIMA, I	930.
		17	34	Karpech			
12	chinensis L. (Chang-						
Brassica	Keng-pai-tsai) (from						
	China)	10		NAGAI &	SASAOKA,	1930a.	
	chinensis L. (Chung-						
27	ming-pai-tsai) (from						
	China)	10		,,,	17	+1	
	chinensis L. (Huaian						
**	Pai-tsai) (from China)	10		12	,,	2.6	
	chinensis L. (Kun-			"			
**							
	ping-pai-tsai) (from	10			17	,,	
	China)	10		73	17		
"	chinensis L. (Peking	10			14	**	
	Yu-tsai) (from China)	10		7)	19	",	
"	chinensis L. (Mustard						
	Chinese White) (from						
	U.S.A.)	10		17	*)	**	
"	chinensis L. (Sawi						
	Daun) (from Malay)	10		17	11	11	
33	chinensis L. (Sawi Pu-						
	teh) (from Malay) .	10		11		**	
>>	chinensis L. (Sawi Pu-						
	teh Daun Kechil)						
	(from Malay)	10		12	7.7	0	
3,1	chinensis L. (Seppaku						
	Taisai) (from Japan).	10		31	+1	17	
11	chinensis L. (Tai-hu-						
	ching-tsai) (from Chi-						
	na)	10		,,	13	14	
,,	chinensis L. (Tai-tou-						
"	ching-tsai) (from Chi-						
	na)	10		1)	33	1.	
12	chinensis L. (Wu-chin-						
12	pai-tsai) from China)	10		,,	**	24	
33	juncea Coss. (Chinese						
,,	Mustard) (from U.						
	S.A.)	13		22	**	,.	
	juncea Coss. (Cha-tsai)			**	**		
,,	(from China)	18		,,	**	,,	
	juncea Coss. (Ching-			"	**		
33							; Š
	tsai) (from China) .	18					9 500

CRUCIF	FERAE (continued)	n	2n				
Brassica	(continued)						
Brassi	ca juncea Coss. (Haga-						
	rashina) (from Ja-						
	pan)	13		Nagai & S	Sasaoka,	1930a.	
**	juncea Coss. (Hsiieh-						
	chieh) (from China).	18		**	1)	**	
33	juncea Coss. (Hsiieh-						
	li-hung) (from Chi-						
	na)	18		13	**	*;	
,,	juncea Coss. (Hua-						
	chieh) (from China).	18		11	,,,	,,	
,,	juncea Coss. (Huang-						
	chieh-tsai) (from Chi-						
	na)	18		,,	,,	**	
	juncea Coss. (Pai-						
•	chieh) (from China).	13		11	1)	,,,	
*,	juncea Coss. (Peking-						
"	Hsiieh-li-hung) (from						
	China)	18		3)	12	.,	
,,	juncea Coss. (Peking-						
,,	Hsiao-chieh-tsai)						
	(from China)	18		37	11	1)	
	juncea Coss. (Pi-chieh)						
"	(from China)	18		27	,,	,,	
"	juncea Coss. (Sawi Hi-						
	tam) (from Malay) .	18		12	1)	17	
,,	juncea Coss. (Tai-						
"	chieh-tsai) (from Chi-						
	па)	18		,,	23	n †	SA-
	,			SAOKA,	1930.		
11	juncca var, crispijolia						
**	BAILEY (Fordhook						
	Fancy) (from U.S.A.)	18		Nagai &	Sasaoka	., 1930a.	
,,	juncea var. crispifolia						
,,	BAILEY (Giant Sou-						
	thern Curled) (from						
	U.S.A.) ,	18		23	2,	23	
11	juncea napijormis Bai-						
"	LEY (Chêng-Kung-						
	chieh) (from China) .	18		**	,,	**	
	juncea na pitormis BAI-						
,,	LEY (Peking-chieh-						
	tsai-Ko-chu) (from						
	China)	18		23	,,	,,	
Rik	liographia Genetica X						9
البالمالال	TOP TOTAL CONTOUR TE						



CRUCIF:	ERAE (continued)	n	2n				
Brassica (continued)						
	a nigra Косн (В. nigra)						
	(from Germany)	8		NAGAI &	Sasaoka	. 1930a.	
12	nigra Kocn (B. nigra,					,	
11	2 types) (from Rus-						
	sia)	ŝ					
	nigra Косн (Brown	5		**	13	1)	
,.	1						
	Mustard) (from Eng-	_					
	land)	8		11	,,,	19	
11	nigra Косн (Noire de	_					
	Sicile) (from France)	8		**	17	,,	
n	nipposinica Bailey						
	(Nakate Mibuna)						
	(from Japan)	10		.,	**	27	
"	nipposinica Bailey						
	(Nakate Sensuji-Ky-						
	ôna) (from Japan) .	10		**	,,	,,	
13	nipposinica Bailey						
	(Okute Mibuna) (from						
	Japan)	10		,,	,,	3.5	
,,	nipposinica Bailey						
,,	(Okute Sensujikyóna)						
	(from Japan)	10		13		,, ;	Sa-
	(2223)			SAOKA,	1930.		
	nipposinica BAILEY			,			
11	(Wase Mibuna) (from						
	Japan)	10		NAGAI &	SASAOKA	1930a	
	oleracea var. acephala	10		.vadar cc	01101101111	, . , . ,	
1)	•						
	DC. (Collard) (from	9					
	England)	7		13	>2	29	
>>	oleracea var. acephala						
	DC. (Chieh-lan) (from						
	China)	9		23	23	,,	
>2	oleracea var. acephala						
	DC. (Extra Curled						
	Scotch Kale) (from						
	England)	9		"	",	13	
,,	oleracea var. acephala						
	DC. (Sawi Hitan Tu-						
	ah) (from Malay)	9		**	11	**	
,,	oleracea var. acephala						
	DC. (B. alboglabra						
	DC. (B. alboglabra Bailey)	9		,,		1930b.	

	CRUCIFERAE (conti	inued)	n	2n						
	Brassica (continued)									
1	Brassica oleracea V	ar. botrytis								
	I (Micha	ielmas Whi-					2204			
	te) (from	England) .	9		Nagai & Sas	SAOKA, I	93UA.			
	olevacea. V	ar, capitata								
	, ottracea .	Head) (from								
	I. (Dab)		9		**	11	**			
	U.S.A.)	var. capitata								
	" oteratea v	nark Market)								
	L. (Dem	ngland)	9		**	.,	**			
	(from E	var. capitata								
	" oleracea	yoda-wase)								
	L. (10)	youa-wase/	9		17	.,	**			
	(from J	apan)	,							
	" oleracea	var. gemmije-								
	ra ZENI	KER (Holborn								
	Exhibit	cion) (from	9		,,	11	0			
	Englan	d)	,		,,					
	" oleracea	var. gongylo-								
	des L. ((Early White)	9			.,	37			
	(from I	England)	10		KARPECHI	enko, 19	30.			
	" pekinens	sis Rupr.	10	10						
	" pekinens	sis Rupa. (Chi-								
	hli Pai-tsai) (from		10		Nagai & Sasaoka, 1930a; Sa					
	China)	China)	10	SAOKA, 1930.						
					31101111					
	" pekinen	sis RUPR.								
	(Chink	to Undai) (from	10		Nagai & Sasaoko, 1930a					
)	10		Monte					
	" perinen	isis Rupp. (Ha-								
	kukei	Santôsai) (from	10			,,	13			
	Japan	1)	10		**	"				
	" pekines	nsis Rupr. (Ha-								
	rumal	ki Kekkyu-ha-	4.0			.,	,,			
	kusai	(from Japan).	10		,,	"	,,			
	" pekine	nsis Rupr. (Hua								
	-hsin-	-tsai) (from Chi-					2/			
			10		,,	**	"			
	" pekine	msis Rupr. (Ka-								
		i Undai) (from								
	Japa	n)	10		19	> 3	*1			
	" pekine	ensis Rupr. (Kel	<u>~</u>							
	kyu	Sauto-hakusai)								
		n Japan)			,,	21				
	" pekin	ensis Rupr. (Ô	-							

CRUCIFE	RAE (continued)	Ď	2n				
Brassica (continued)						
	gomba Santôsai)						
	(from Japan)	10		Nagai & Sa	SAOKA,	1930a.	
Brassico	pekinensis Rupr. (Pe-						
	king Hsiao-pai-tsai)						
	(from China)	10		12	,,	,,	
12	pekinensis Rupr. (Pe-			,,	"	**	
11	king Tai-pai-tsai)						
	(from China)	10			,,	,,	
	pekinensis Rupr. (Sa-	• •		33	"	,,	
,,	wi Daunca) (from						
	Malay)	10				,,	
	pekinensis Rupr. (Sa-			3.5	7.3	,,	
	wi Puteh Daun Be-						
	sar) (from Malay) .	10					
	pekinensis Rupa. (Tai-	10		"	**	,,	
"	pai-tsai) (from China)	10				,, ; §	SA.
	par-tsar, (moni cinna,	10		SAOKA, 1	930.	,, , , -	
	pekinensis Rupr. (Un-			DAULL, 1	,,,,,		
,,	tai, 3 types) (from						
	China)	10		Nagai & Sa	SOAKA	1930a.	
	pekinensis Rupr. (Ya-	10		IVACAI CO	,	-,00,,,	
"	su Undai) (from Ja-						
	pan)	10					
	rapa L. (B. campes-	10		''	19	,,	
"	tris) (from Russia) .	10					
	rapa L. (Habirona)	10		**	"	33	
33	(from Japan)	10					
	rapa L. (Hatakena)	10		.,	,,	"	
13	(from Japan)	10					
	rapa L. (Hikabu) (from	10		**	"	27	
13	Japan)	10					
	rapa L. (Hinona) (from	10		.53	33	19	
,,	Japan)	10					
	rapa L. (Imaichi Ka-	10		27	,,	,,	
.33	ba) (from Japan)	10					
	rapa L. (Kisona) (from	10		22	32	2)	
**	Japan)	10					
	rapa L. (Komatsna)	10		23	23	23	
7.9	(from Japan)	10					
	rapa L. (Kurona) (from	10		3.0	12	33	
29	Japan)	10					
	rapa L. (Man-Ching)	. 0		t)	"	33	
35	(from China)	10					
	(mom china)			28	77	1)	

CRUCIFERAE (continued)	13	2n		
Brassica (continued)				
Brassica (continued) Brassica rapa L. (Nozawana)			4000	
(from Japan)	10		Nagai & Sasaoka, 1930a.	
raba I. (Purple-top				
Mammoth) (from				
England) · ·	10		21 . 11	
" rapa L. (Shôgoin Ka-				
bu) (from Japan)	10		" ; S	A.*
Day (1131-15)			saoka, 1930.	
" rapa L. (Suigukina)			1020-	
(from Japan)	10		Nagai & Sasaoka, 1930g.	
Brassica hybrids:				
Brassica juncea Coss. (Ching-				
tsai) × B. napus L.				
var. napobrassica			1000	
Reicнв. (Rutabaga)	10 + 171		Sasaoka, 1930.	
	2			
" juncea Coss. (Ching-				
tsai) × B. napus L.				
var. napobrassica				
Reiche. (Rutabaga)	F_2 12+ 9_1 ,		o n	
	2			
	$\frac{12+10_1+}{2}$			
	1½,			
	$10 + \frac{12}{1}$			
	2			
" napus L. var. napo	•			
brassica Reichb.				
(Rutabaga) × B. jun				
cea Coss. (Tai-chieh			<u>Б</u> О	
tsai) · ·	. 10+171			4
T asaba				
" napus L. var. napo) -			
$brassica$ Rеіснв. (Rutabaga) $\times B$. no	y			
pus L. var. oleife				
DC. (Ochosen)				
Brassica napus L. var. nap				
brassica Reichb.				
(Rutabaga) $\times B. mi$				
posinica Bailey (
kute sensujikyôr		1	2)	
auto sonsajiny or	2	_		
	-			

CRUCIFERAE (continued)	n	2n			
Brassica hybrids (continued)	44				
Brassica napus L. var. napo-					
brassica Reichb.					
(Rutabaga) × B. peki-					
nensis Rupr. (Tai-					
psai-tsai)	$\frac{10+9}{2}$		Sasaoka,	1930.	
	2				
,, napus L. var. oleițera					
DC. (Ochosen) \times B .					
napus L. var. oleijera					
DC. (Rape)	19			24	
" napus L. var. oleifera					
DC. (Ochosen) $\times B$.					
rapa L. (Shogoin-					
Kabu) F	10+9:				
	2				
napus L. var. oleifera	2				
DC. (Ochosen) $\times B$.					
rapa L. (Shogoin-					
• , , ,	10 00				
Kabu) F ₂	12-20		1)	**	
7.17	2				
" napus L. var. oleitera					
DC. (Ochosen) $\times B$.					
pekinensis Rupa.					
(Chili-pai-tsai) F ₂ one					
plant	$11+9_{1}$		13	32	
	2				
" pekinensis Rupr. (Chi-					
li-pai-tsai) \times B , na -					
pus L. var. oleifera					
DC. (Ochosen)	10+91				
	2				
. Raphanus raphanistrum	9	18	KARPECHE	nko, 1930.	
" sativus L. (Indian					
radish)	9		Sutaria, 1	930.	
Raphanobrassica (Raphanus sa-					
tivus L. × Brassica oleracea					
L	18	36	KARPECHE	кко, 1930.	
Raphanobrassica × Brassica					
campestris		28	,,	**	
Raphanobrassica × Brassica			**		
carinata		35	,,	23	
Raphanobrassica × Brassica			,,	**	
napus		36		,,	
τωρωσ			,,	**	

CRUCIFERAE (continued)	n	2n				
Raphanobrassica × Brassica		2 8 .	Karpeche:	_{NKO} , 1930).	
pekinensis						
Raphanobrassica × Raphanus		27	11	11		
raphanistrum	8		LAWRENCE	, 1930.		
Bursa granaistoru	15 1)		**	3.9		
Lobularia maritima	12		**	**		
Hesperis tristis	14		**	19		
Matthiola bicornis D.C		14	MANTON, I	.930.		
tomastralis R Br		14	**	32		
odoratissima R. Br		12	,,	,,		
banniflora R. Br		14	21	17		
cinuata R. Br.		14	**	13		
"tatagica D.C		12	35	17		
Thereala Boiss, et O.		12	12	ij		
"						
ROSALES						
SAXIFRAGACEAE	ca. 16		WHYTE, 1	930.		
Saxifraga granulata	ca. 16		**	,,		
, rosacea rosacea × S. granu-	ca. 10					
lata $F_2 = S$. potter-	3236			.,		
nensis	02 00					
ROSACEAE	17		LAWRENC	E, 1930.		
Pyrus communis	• •	34	DARLING	TON & MC	FFETT	, 1930.
	17, 51		Lawrence			
" malus	2					
Pyrus malus L. varieties:	-					
Akero ²) · · · · · · ·	17		HEILBOR	N. 1930.		
Allington pippin		34	DARLING	TON & M	OFFET	r, 1930.
Annie Elizabeth		34	,,	,,	**	1.5
Baldwin	51		23	2,	,,,	1 2.5
Battavin	2					
Beauty of Bath		34	**	13	53	**
Blenheim Orange		51	1)	**	**	2.0
Bramley's Seedling		51	**	,,	,,	11
" (seedlings	s) ³)	38-41,4	43 "	13	**	3.3
,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,		46,4	7			
Carlisle pippin		34	21	"	73	13
out the 16 or publishe	d in Gen	etica was	s corrected	by Law	RENCE	in a re

¹⁾ The number 16 as published in Genetica was corrected by LAWRENCE in a re-

 ¹⁾ The number to as published in Genetica was corrected by print received from him.
 2) The buds of cut twigs placed in water and subjected to various temperatures (10° to 35°) showed varying numbers of univalent chromosomes.
 3) Chromosome numbers of 17 seedlings obtained from open pollination of Bransley's Seedling were obtained from their root-tips.

ROSACEAE (continued)	n	2n				
Pyrus malus L. varieties (continue	ed)					
Cox's orange pippin	/	34	DARLINGTO	W & VC	OFFETT	1930
Cox's Pomona		34	19	,,		,
., 1)	17		HEILBORN		13	**
Crimson Bramley		51	DARLINGT		OBFETT	1930
Duchess Favorite		34	,,	17	,,	,
Early Victoria		34	,,	,,	,,	.,
Genet Moyle		51	",	,,	"	,,
Grenadier		34	''	,,	"	12
Irish Peach		34	.,	.,	",	,,
Kentish		34	,,	,,	,,	"
Keswick Codlin		34	,,	23	"	79
Lane's Prince Albert		34	,,	,,	,,	"
Lord Derby		34	,,	,,	,,	"
Masux Codlin		34	,,	12	"	"
Newton Wonder		34	,,	,,	,,	,,
Northern Spy		34	,,	,,	"	.,
Odlins		34	,,	,,	,,	**
Reinette Zuccamaglio		34	"	,,	**	"
Ribston pippin	51		,,	,,	,,	,,
,	2		,,	,,	"	**
Rival	-	34			**	13
Sävstaholm 1)	17		HEILBORN	, 1930.	"	,,
Weisser Astrachan 1)	17			• • •		
Winter Magetin		34	DARLINGTO		OFFETI	, 1930.
Worcester Pearmain		34	,,		19	,,
Doucin (Malling Type VI) .		34	,,	,,	.,	
Jaune de Metz (Malling Type				.,	,	.,
IX)		34	1)	,,	,,	15
Nonsuch (Malling Type VI) .		34	,,	,,	,,	
Old English Broadleaj Para-			"			**
disc (Malling stock Type I)		34		,,	,,	
Pyrus Ringo L		34	,,	,,	**	,,
Fragaria americana alba (Por-				**		
TER)	7 2)		Існіјіма,	1930.		
" bracteata Heller	7 2)		,,	1)		
" californica Cham. et	•			.,		
Schlecht	7 2)		12			
" chiloensis	23		SCHIEMAN			
		56	East, 1930			
A ACCESSION AND SECURITY AND A CONTRACTOR AND A CONTRACTO			,			

¹⁾ See foot-note 2 page 136.
2) In this species one pair of chromosomes sometimes passed to the poles in early metaphase before the other chromosomes had started to separate ("precursory chromosomes"). Non-disjunction of one pair often gave rise to different numbers of chromosomes in the two daughter nuclei. Doubling of the chromosome number also occurred.

ROSACEA	E (continued)	n	2n	
Fragaria (
Fragario	a chiloensis L	28 1)		Існіјіма, 1930.
,,	chiloensis var. Chesa-			
<i>"</i>	peake	28 1)		n n
,,	collina	7		SCHIEMANN, 1930; RUDLOFF,
"				1930a.
**	collina Ehrh :	7 2)	14	1сніјіма, 1930.
,,	Daltoniana	7		Schiemann, 1930.
	clatior	21		11
"		21 ³)	42	Kihara, 1930.
	elatior Ehrh	21 4)	42	Існіјіма, 1930.
2)	glauca Watson	28 1)		22
,,	grandiflora	28		Schiemann, 1930.
17	granus ; · · · ·		56	Kihara, 1930.
	Hagenbachiana	7		SCHIEMANN, 1930; RUDLOFF,
***	11th geriotetoristories			1930a.
	maxima	7 2)		Існіјіма, 1930.
>>	monophylla	7		SCHIEMANN, 1930.
,,	nilgerrensis Schlecht	7 5)		Існіціма, 1930.
,,		7		Schiemann, 1930; East, 1930b.
"	vesca	1	14	East, 1930a.
	Υ.	7 5)		Існіттма, 1930.
"	vesca L	7		Ruploff, 1930a.
"	vesca (?)	7		SCHIEMANN, 1930.
,,	vesca (hybrid)	1		Colling
,,	vesca var. rosea Ros-	7 5)		Існіјтма, 1930.
	TRUP	,		Schiemann, 1930; Rudlöff,
13	virginiana	28		1930a; East, 1930b.
				EAST, 1930a.
		4	56	
,,	virginiana Duchesne	28 4)		Існіјіма, 1930.
n	sp. "Schöne Meissne-			1020
	rin"	7		Rubloff, 1930a.
**	sp. (429) (white fruit-			1000
	ed from Hawaii)	7 5)		Існіјіма, 1930.
1) No.	a-disjunction as well as t	he precur	sory be	chavior of a pair of chromosomes

¹⁾ Non-disjunction as well as the precursory behavior of a pair of chromosomes was frequently observed. Sometimes 29 chromosomes were counted at early diakinesis

4) Non-disjunction and lagging of chromosomes was observed in this species. There were present chromosomes of two different shapes.

5) See foot-note 2 page 137.

²⁾ In this species one pair of chromosomes was smaller than the other six pairs and frequently failed to divide at metaphase, passing to either pole without separation of the two chromosomes.

³) In the embryo-sac-mother-cell division of female plants one pair of heterochromosomes (the W Z pair) was distinguishable.

⁶⁾ The chromosome behavior was much more regular in this species than in the other tetraploid species.

DOCACDA	72 (_		
	E (continued)	n	2n		
Fragaria (c					
rragaria s	sp. (F. P. I. 64856)				
	(seeds from Hingan,	~		_	
77	Manchuria)	7		Ichijima,	1930
Fragaria h					
ragaria	americana alba \times F.	en 1.			
	vesca var. rosea F1	7 1)		19	**
**	$(alba \times rosea) \times F.$				
	chiloensis (Point Are-	_			
	na Beach)	7		**	**
"	californica × F. chi-	5 . 64			
	locnsis (P.A.B.) F_1 .		35	**	13
	T. 17	2			
23	chiloensis (P.A.B.) ×				
	F. bracteata F ₁		35	,,	3.7
12	chiloensis (P.A.B.) ×				
	F , collina F_1		35	15	**
"	chiloensis (P.A.B.) ×				
	$F.$ maxima F_1	$7+21_{\frac{1}{2}}$,,	***
	chiloensis (P.A.B.) ×	2			
"	F. nilgerrensis F ₁		35		
,,	chiloensis (P.A.B.) ×		•	"	**
"	$F. sp. (F.P.I.) F_1.$	7 ± 21 ±	35		
,	- · · · · · · · · · · · · · · · · · · ·	$\frac{1}{2}$		**	**
,,	collina × F. maxima	2			
,,	F,		14		
2.2	collina × F. nulger-		-	,,	,,
"	rensis F ₁		14		
,,	collina × F. vesca	7		RUDLOFF,	1930a.
,,	elatior × F. bractea-			. ,	
,,	ta \mathbb{F}_1		42	Існіјіма,	1930α.
,,	elatior × F. nilger-				
	rensis F ₁		42	n	3.3
	grandiflora × F. ela-			"	**
	tior	ca. 282) units	49	Kihara, 1	930.
,,	grandiflora × F. Ha-				
**	genbachiana	35		SCHIEMAN	n, 1930.
	$grandiflora \times F.vesca$	$14 + 7_1$		RUDLOFF,	
.,	-	2		.,	
2.5	Hagenbachiana × F.	-			
••	grandițlora	35		SCHIEMAN	n, 1930.
	with the same of t				,

Non-disjunction was occasionally observed.
 The number of univalents was variable.

	n	2n		
ROSACEAE (continued) Fragaria hybrids (continued)	1.2			
Fragaria maxima × F. collina				
F_1 (3 types)		14	Існіјіма	, 1930.
nilgerrensis × F. col-				
lina $F_1 \cdot \cdot \cdot \cdot \cdot$		14	13	1)
$nilgerrrnsis \times F$, Du-				
chesnea F ₁		14	,,	19
nilgerrensis imes F. ela-				
tior F ₁		14	13	13
,, nilgerrensis \times F. sp.				
" (429) F ₁		14	"	"
" $(rosea \times alba) \times F$.				
elatior	7	14	13	13
" (rosca \times alba) \times F.				
virginiana		35	**	,,
" (rosea \times alba) \times F .				
virginiana (one ex-				
ceptional plant)		56	,,	11
" vesca \times F. americana	er 1)			
alba F_1	7 1)		Punto	уг, 1930а.
,, vesca \times F. chiloensis.	7 7			01, 270000
" vesca $ imes F.$ virginiana	/	35	East, 1	9306.
The state of the state of		0.0	3575,	,
" vesca × F. virginiana		14		
(one plant)			1,5	7.0
$(vesca \times F. vesca F_1) \times F. chiloensis$		14 2	1)	1930a.
\times F. Colliders \times F			,	
lina F ₁		14	Існија	ил, 1930.
(successioned × collina)				
× F. vesca rosea				
(large and dwarf)		14	17	.11
(cinainiana × clauca)				
× F. collina	$7 + 21_1$			13
	2			
" sp. (429) \times F. ameri-			-	
cana alba F	7		31	13
" sp. (429) \times F. collina				
$F_1 \dots \dots \dots$		14	**	"
" sp. (429) × F. clation				
$F_1 \dots \dots$	7	14	13	11
		eromy ob	2012000000	es were or

¹⁾ Non-disjunction and a pair of precursory chromosomes were occasionally observed

served.

2) Twenty-four such plants may have been produced through division of vegetative cells or through induced parthenogenesis.

00040040040				
ROSACEAE (continued) n	2n			
Fragaria hybrids (continued)				
Fragaria sp. (429) × F. maxima				
$F_1 \dots \dots$	14	Ichijima,	1930.	
,, sp. (429) $ imes$ F. nilger-				
rensis F ₁	14	19	11	
" sp. $(429) \times F$, sp.				
$(F.P.I.) F_1 \dots $	7 1)	23	**	
POTENTILLA 2)				
Section I. Potentillae Tricho	carpae			
Fruticosae				
Potentilla fruticosa	14	SHIMOTOMA	i, 1930a	, b.
Tridentatae				
Potentilla tridentata	28	1)	**	1)
Speciosae				
Potentilla speciosa	14	"	,,	1)
Nitidae				
Potentilla alchimilloides	14	,,	**	,,
Crassinerviae				
Potentilla valderia	14	.,	.,	19
Section II. Potentillae Gymn	ocarpae			
Subsect. A. Closterostylae				
Rupestres				
Potentilla calycina	14	12	3.5	,,,
" glandulosa	14	,	1.5	,,
" glandulosa var. fissa	14	,,	,,	**
" glandulosa var. glu-				
tinosa	14	**		,,
" glandulosa var. Wran-				
gelliana	14	**	,,	**
" rupestris	14	19	**	,,
Subsect. B. Conostylae				
Multifidae				
Potentilla bipinnatifida	42		,,	
multifida	42		,,	"
" pennsylvanica	28	"	,,	11
Graciles		**	,,	
Potentilla crinita	84	,,	,,	12
, flabelliformis	70	"	,,	11
" gracilis	70	"	,,	,,
" Hippiana	42	"	,,	,,
" megalantha	70	"	,,	"
		**	"	,,

Non-disjunction was occasionally observed.
 Classification is according to Wolf (1908).

ROSACEAE (continued)	2n			
Potentilla (continued)				
Subsect. B. (continued)				
Haematochroae				
Potentilla argyrophylla	56 St	имотомаі,	1930a,	b.
atrisanguinea	56	"	1.1	, ,
, haematochrus	112	,,,	**	1)
" nepalensis	42	,,	**	*
sibthorpiana	98	,,,	*1	,,
Niveae				
Potentilla nivea	70	,,	,,	**
Argenteae				
Potentilla argentea	42	,,		
canescens	42	1)	**	
" canescens var. inciso-				
serrala	42	13	12	
canescens var. Typica	42	**	17	**
" dealbata	42	13	y :	
" Meyeri	42	**	••	
Collinae				
Potentilla collina	42	**	**	*1
Sommieri	42	1)	**	,.
" sordida	42			٠,
Rectae				
Potentilla hirta	28	,.		,.
, laciniosa	28	*1	••	2.7
" recta ·	42	**	*1	,,
" recla var. Herbichii .	42	11	**	.,
, recta var. obscura f.				
jallacina	42	11	**	*
" taurica var. Nicicii .	42	"	**	*1
" transcaspia	42	11	23	.,
Rivales				
Potentilla Dombeyi	42	17	11	
" intermedia	28	**	12	1.0
" supina	28	13	13	**
Persicae				
Potentilla nevadensis	28	13	13	22
Grandiflorae				
Potentilla Buccoana	28	v	19	
" pyrenaica	28	"	1,	*1
" umbrosa	70	"	,,	11
Chrysanthae				
Potentilla chrysantha	42	**	,,	,
" chrysantha var. nor-	•			
malis	42	"	12	,
" thuringiaca	42	"	*1	,

ROSACEAE (Continued)	n	2n			
Polemilla (continued)					
Subsect. C. Gomphostylae					
Aureae					
Patentilla alpestris		42	SHIMOTOM	AT. 1930	ia h
., gelida		42	D	, .,	
velutina		42	"	**	**
Fragarioides			,,	• • • • • • • • • • • • • • • • • • • •	9.1
Potentilla Freyniana		14	•9		> 1
Tormentillae				•	**
Potentilla reptans		25	,,	,,	
Rosa				.,	,.
Section Caninae					
Subsection vestitae					
Rosa tomentosa var. Richard-					
soniana Harrison var. nov.		35	Harrison	, J. W. I	H., 1930
Section Spinosissimae					,
Rosa spinosissima var. rivalis					
Harrison var. nov		28	**	13 13	11 27
Wild roses of Western U.S.A.					. ,,
Group Rosa Woodsii					
LINDL.					
Rosa adenosepala		14	ERLANSSO	x, 1930.	
., urizonica		14	وذ	11	
" Fendleri		14	,,	,,	
" granulițera		14	22	**	
" gratissima		14	,,	>1	
., hypoleuca		14	2,	23	
" Macounii		14	,,	13	
., mohavensis		14	13	3.9	
" neomexicana		14	"	,,	
" pyrijera		14	,,	,,	
" salicetorum		14	**	,,	
" ultramontana		14	23	,,	
" Woodsii		14	12	23	
Group Rosa pisocarpa					
A. Gray					
Rosa anacantha		14	"	33	
"Copelandii ,		14	,,	,,	
" Eastwoodiae		14	>>	**	
" pisocarpa		14	32	,,	
" Pringlei		14	23	**	
Group Rosa nutkana					
PRESL.					
Rosa manca		42	3)	*2	

ROSACEAE (continued) n	2n		
Wild roses of Western U.S.A. (continued)			
Group Rosanutkana Prest. (continue	ed)		
Rosa melina	42	ERLANSSON,	1930.
,, muriculata	42	**	3)
" nutkana	42	13	D
" Spaldingii	42	,,	,,
Group Rosa californica			
Rosa Aldersonii	28	,,	25
"brachycarpa	28	**	**
Breweri	28	,,	2.7
, californica	28	,,	"
(?),, corymbiflora	28	,,	33
" Dudleyi	23	31	,,
"Greenei	28	,,	1)
" Johnstonii	28	"	"
" myriantha	23	,,	12
" rotundata	23	**	23
" Santa-Crucis	23	27	1)
(?), spithamea (dwarf)	28	"	,,
Prunus amygdalus Stokes 8		DARLINGTO	N, 1930a.
" avium 8		LAWRENCE,	1930.
" avium Linn. var. Bigar-			
reau Kentish 8		DARLINGTO	N, 1930a.
, avium Linn, var, Bigar-			
reau Noir de Schmidt . 8		*1	>>
" avium Linn, var. Gov-			
" ernor Wood 8		33	12
avium nana 24		,,	13
7 2			
" cerasijera Ehrh. var.			
Red Myrobalan 8		13	,,
., cerasus 16		LAWRENCE	1930.
, domestica 24		,,	**
" domestica Linn 24		DARLINGTO	n, 1930a.
" domestica var. Cam-			
" bridge Gage 1) 8+34+			
2_3+2_1		27	,,
" domestica var. Coe's			
Violet 1) 18+33			
+31		"	,,
" domestica var. Comte		~	**
d'Althan 1) 24, 23+2 ₁		**	1)
d 12211dir /		"	"

¹⁾ This is either a hybrid between $P.\ domestica$ Linn, and $P.\ insititia$ Linn, or a variety of either.

ROSACE	IAE (continued)	n	2n		
Prunus (continued)				
Prunu	s domestica var. Old				
	Greengage	20+81		DARLINGTO	n. 1930a.
+1	domestica (Washington	•			
	seedling) 2	24, 21 ÷ 2	3.		
		22-41	J.		**
.,	Fenzliana		16	,,	»; »
**	insititia Linn	24		,,	,,
	lannesiana amabilis	8			•,
	persica Stokes var.			**	"
,,	Chinese Flat Peach	8			
	persica Stokes var.	-		**	,,
,,	Darwin	8			
	persica Stokes var.	-		,,	*)
11	Earliest of All	8			
	persica Stokes (an or-	Ü		,,	*7
,,,	namental form, Kew).	8			
	spinosa Linn. (wild	Ü		*1	27
+3	seedling, Merton)	14 1 3 4			
				, , , , , , , , , , , , , , , , , , ,	1000
21	spinosus	16		LAWRENCE	
21	triflora var. Shiro	8		DARLINGTO	on, 1950a.
"	domestica × P. Amyg-	•			
	dalus var. Jefferson ×				
	P. cerasifera var. Red				
	Myrobalan				
•		6+54,			
	13	$3+1_3+3$	1,		
		$15 + 2_1$		*)	11
t o	persica (variety) \times P.				
	Amygdalus (variety of				
	Bitter Almond)	8		33	19
23	$triflora$ var. Shiro $\times P$.				
	cerasifera var. Pissardii	8		"	1)
1,	triflora (Japanese				
	Plum) × P. persica				
	var. Sea Eagle	8		"	**
LEGUM	INOSAE				
Acacia	a arabica Willd		\pm 52 and		
			± 104	GHIMPU, 1	930.
,,	cyanophylla Lindl		26	12	"
11	dealbata Link		26	,,	,,
11	decurrens WILLD		26	,,	.,
,,	eburnea Willd		\pm 52 and		
			± 104	33	9
Bibli	ographia Genetica X				
	-0P				

LEGUMINOSAE (continued)	п	2n		
Acacia (continued)	26	⊥ 52 and		
Acacia Farnesiana Willi	2.2	= 104	Gнімри	. 1930.
	26	+ 52 and	GHIMIO	, . ,
" korrida Willd	20	± 32 and ± 104		
			"	17
" longijolia Willd		26	33	"
" podalyriaejolia A. Cunn.		26	"	"
" saligna WENDL		26	,,	**
" scorpioides A. Chev.				
var. adstringens (Schun.				
et THONN.) A. CHEV		52, 104		
		and 208	23	**
" scorpioides A. Chev.				
var. nilotica Benth		\pm 52 and		
		± 104	**	**
" scorpioides A. CHEV.				
var. pubescens Benth.		\pm 52 and	L	
•		<u>+</u> 104	,,,	,,
Mimosa pudica L	24		Kawak	мі, 1930.
Cassia didymbotrya	14		SETHI, 1	930.
" Leschenaltiana D.C	24		KAWAKA	лмі, 1930.
" mimosoides L. 1	3		,,	,,
, mimosoides L. 2	16		12	- 3
th ma Y	12		73	.,
Sophora angustifolium Sieb. et				
Zucc	9		11	1)
Crotalaria alata HAM	3			
, 1 TT TO TE	8		.,	
, due T	8	16	"	
usaramoensis Back.	3			**
,,	8		•	1.2
" valetonil	24		**	1)
Lupinus angustifolius L	24		**	***
" luteus L			,,	**
Cytisus scoparius Link	24		13	33
TRIGONELLA 1)				
Section Eutrigonella				
Subsection Capitatae				
Trigonella coerulea (L.) Ser		16	FRYER,	1930.
Subsection Gladiatae				
Trigonella joenum graecum L		16	**	1)
Section Pocockia				
Subsection Samaroideae				
Trigonella cretica L. DESR		probably 1	.6 "	1)

¹⁾ Classification into sections is according to TAUBERT (1891).

LEGUMI:	NOSAE (continued)	n	2:1		
Medicas	go apiculata Willd		16	Симру.	1930.
13	arborea Linn		32	**	11
13	ciliaris Krock		16	17	**
5.9	denticulata Willd		16	, ,	.,
21	discijormis D.C		16		
32	Echinus D.C		16		**
	jalcata Linn		32	**	13
13	Gerardi Waldsr. et				
	Кіт		16	,,	,,
33	Helix Willd		16	,,	,,
21	laciniata Mill		16	,,	33
,,	lappacea Desr		16	,,	,,
,,	littoralis RHODE		16	**	,,
,,	lupulina Linn		16	,,	,,
,,	maculata Willd		16	,,	12
11	marina Linn		16	,,	.,,
13	minima Linn		16	,,	**
.,	Murex WILLD		16	,,	
.,	nigra Krock		16	,,	73
.,	olivitormis Guss		16	"	,,
,,	orbicularis All		16	"	,,
.,,	pentacycla D.C		16		**
,,	rigidula D.C		16	",	17
,,	sativa L	16		Kawak	., амі, 1930.
,,	sativa L. 1)	16	32	REEVES	
.,,	sativa Linn, (sensu		0.2	TUBLIVE	, . , 000.
,,	lato)		32	Gнімри	1030
	sativa Linn. var. de		0.2	GIII.III C	, . ,
19	Poitou		32		
	saliva Linn, var. Gé-		Ų.	"	"
,,	ante		. 32		
	scutellata Mill		32	,,,	"
**	sphaerocarpa Bertol.		16	.9	19
2.9	Tenoreana Ser		16	,,	7.7
"	tribuloides Desr		16	17	1)
"	truncatula Gaertn		16	> 9	
ij	tuberculata Willd		16	19	79
**	tuverculata Willd			,,	,,
Manage			16	"	**
MEDICAGO					
	upularia - Antolio-T	0	47	Paren	1020
Medica	go lupulina L	8	16	FRYER,	1730.

 ¹⁾ The common and variegated varieties were examined cytologically but no consistent differences were found.
 2) Classification into sections is according to TAUBERT (1891).

LEGUMINOSAE (continued)	n	2n		
Medicago (continued)				
Section Falcago				
Section Fairago				
Medicago falcata L strains I, II		32	FRYER,	1930.
		16 ¹)		1,
strain III		32		
" media Pers.("Grimm")		35	**	"
" media ²)		55	12	11
" platycarpa (L.)		16		
TRAUTV		16	,,	,,
" ruthenica Trautv			,,	**
" sativa L		32	. ,,	11
Section Spirocarpos				
Subsection Orbiculares				
Medicago carstiensis Wulf		16	"	•
orbicularis All		16	**	11
" soleiralii Duby		16	**	"
Subsection Intertextae				
Medicago ciliaris L. (ALL.)		16	12	1)
" echinus D.C		16	2.9	**
" intertexta MILL		16	,,	**
Subsection Scutellatae				
Medicago rugosa DESR		32	,,	13
scutellata L. WILLD		32	,,,	.,
Subsection Rotatae				
Medicago rotala Boiss		16	.,	,,
Subsection Pachyspirae				
Medicago littoralis RHODE		16	,,	**
		16	,,	17
municata (I) Arr		16	,,	,,
" Dwg		16, 17	or	
" ooscura Ketz		18	**	
rigidula (L.) Desr		14	,,	
t 1		16	,,	
Subsection Euspirocarpae			,,	.,
Medicago arabica (L.) ALL		16		
hishida sautimia			"	",
" hispida confinis		14		
Koch (Burnat)			"	"
" hispida denticulata		14		
WILLD. URBAN		14	,,	,,
" hispida nigra Willd.		14		
BURNAT		14	,,	.,
" hispida terebellum		4.4		
WILLD. URBAN		14	37	"

¹⁾ One tetraploid cell with 32 chromosomes was found.
2) Though this one plant was *Media* — like it was thought to be a hybrid by its irregular meiosis.

LEGUMINOSAE (continued)	n	2n			
Medicago (continued)					
Subsection Leptospirae					
Medicago coronata Desr		16	FRYER,	1930.	
laciniata Mill		16	.0	2.9	
MELILOTUS 1)					
Section Campyloritis					
Melilotus sulcatus Desf		16	11	1.5	
Section Plagiorytis					
Melilotus officinalis (L.) Medi-					
KUS,		16	• •	12	
Section Coelorytis					
Melilotus alba Medikus		16	,,	17	
" indica All	8	16	,,,	33	
Trifolium hybridum L	ô		Kawak	AMI,	1930.
" pratense L	7		**		27
" repens L	16		19		1.2
Lotus corniculatus L. var. japo-					
nicus Regel	Ó		2.5		17
Tribe Galegeae Bronn ²)					
II. Subtribe Psoraleinae					
TAUB.					
Psoralea bituminosa L		20	TSCHEO		
	10	20	KREUT	ER, 19	930.
,, glandulosa L		20	32		,,
,, macrostachya . –		20	,,		11
,, palaestina L		20	15		11
Amorpha Californica Nutt	10				23
" jruticosa L		40	TSCHEO	HOW,	, 1930.
C	ea. 20 °)		KREUT	ER, 1	930.
" fruticosa var. glabra . c	ea. 20 3)		**		p
" microphylla Pursh	10		**		,,
I. Subtribe lndigoferinae					
TAUB.					
Indigojera decora Lindl		48			
" Gerardiana Wall	24		KREUT		
" Kirilowi Maxim	8		KAWAF	KAMI,	1930.
,, pscudo-tinktoria					
Matsum	8		,,		29
" saffruticosa Mill	16		39		19

1) Classification into sections is according to Taubert (1891).
2) Classification is according to Ascherson & Graedner, supplemented by Monograph by Bunge (1869 & 1874) on Astragalus and Oxytropsis.
3) Because the chromosomes were "clumped" on the heterotypic division stages it was difficult to determine the haploid number exactly.

LEGUMINOSAE (continued) n Tribe Galegeae Bronn (continued) III. Subtribe Tephroseinae TAUB.	2n		
Galega officinatis L	16	Tschechow, 1930. Kreuter, 1930.	
. orientalis Lam (probat			
Millettia japonica A. Gray		" " Каwакамі, 1930.	
• •			
2 Upin, 00 pm 22 00 mm m m m m m m m m	,	31	
Wistaria brachybotrys Sieb. et	3		
) }	33 II	
" juli to witted D.C	3	1)	
" multijuga van Houtte			
(W. chinensis var.		T 1020	
multijuga Hook.) .	48	Тѕснесном, 1930.	
IV. Subtribe Robiniinae TAUB.		75 1020	
Robinia hispida	0 ¹) 30 -	KREUTER, 1930.	
" pseudacacia L	22	Tschechow, 1930.	
(probab	y)10	KREUTER, 1930.	
Sesbania aculeata Pers 1	6	Kawakami, 1930.	
Carmichaelia australis R. Br 1	5	KREUTER, 1930.	
V. Subtribe Coluteinae TAUB.			
Colutea arborescens L	16	Tschechow, 1930.	
" halepica Lam	3	KREUTER, 1930.	
" media Willd. (C. ar-			
borescens L. × C.			
orientalis LAM.)	8	39	
" orientalis Lam	8	12	
VI. Subtribe Astragalinae Tau	в.		
Caragana arborescens LAM	16	Тscнесноw, 1930; 1930.	KREUTER,
" jrutescens D.C	32	Tschechow, 1930.	
Genus Astragalus Tourn.			
Subgenus Trimeniaeus Bunge			
Astragalus baeticus L	3	KREUTER, 1930.	
" edulis Dur ca.	14	"	
	4 2)	11	
	48	Теснесном, 1930.	
" sesameus L	8	KREUTER, 1930.	
	16	Tschechow, 1930.	

 ¹⁾ Reduction division was irregular showing 10 large and 20 smaller chromosomes.
 2) Several pairs of chromosomes showed a tendency to become associated in the metaphase plate so that only 22 chromosomes were sometimes counted.

LEGUMINOSAE (continued) n	2n		
Tribe Galegeae Bronn (continued)			
VI. Subtribe Astragalinae			
TAUB. (Continued)			
Genus Astragalus Tourn. (continue	sd)		
Subgenus P h a c a Bunge			
Astragalus altaicus Bunge	16	Теснесно	w, 1930.
" exscapus B. Trans-			
silvanicus A. & G.			
= A. Transsilvani-			
cus Barth	16	1)	,,
" galegiformis L 8		KREUTER,	1930.
membranaceus Fisch.	16	Тѕснесно	w, 1930.
" Sieversianus Pall	16	**	",
Subgenus Hypoglottis Bunge			
Astragalus hypoglottis L	16	,,	**
Subgenus Tragacantha Bunge			
Astragalus Echinus D.C	64	.,	,,
Subgenus Cereidothrix Bunge			
Astragalus candidissimus LED.	16		
, falcatus Lam 8		KREUTER,	
" massiliensis Lam	16	,,	,,
" monspessulanus L &		,,	.,
Subgenus Calycophysa			
Astragalus alopecurioides L 3		KREUTER,	, 1930.
vulpinus Willd &		.,	,,
Subgenus?			
Astragalus sinicus L		KAWAKAM	п, 1930.
Biserrula Pelecinus L		KREUTER.	. 1930.
Calophaca wolgarica Fisch 8		,,	.,
Genus Oxytropis D.C.			
Subgenus Euoxytropis Boiss.			
Section Ortholoma Bunge			
Oxytropis vaginata Fiscu	16	Тѕснесно	w, 1930.
Section Diphragma Bunge			
Oxytropis Halleri Bunge	16	39	,,
" uralensis Pall	16	17	,,
Genus Glycyrrhiza L.			
Glycyrrhiza aspera Pall	16	,,,	12
" echinata L 8		KREUTER	, 1930.
" uralensis Fisch	16	Тѕснесн	ow, 1930.
Ornithopus sativus Brot 8	16	Kawakai	мі, 1930.
Onobrychis viciaefolia Scop 11		Corti, 19	30a.
Aeschinomene indica L 20		Kawaka	мі, 1930.
Arachis hypogaea L 20	40	,,	13

LEGUMINOSAE (continued)	11	2n		
Arachis (continued)				
Arachis hipogaca var. micro-			. 150	10
carpa A. Chev		= 40	GHIMPU, 190	5U.
" prostrata Bentu. var.				
Rasteiro		±40	., .,	1020
Desmodium perpesium D.C	11		Kawakami,	1930.
Lespedeza biculor Turcz	9		11	*1
., cyrtobotrya Miq	9		F-1	**
" homoloba NAKAI	9			n.
Sieboldi M19. · · ·	9		1.0	13
" Sieboldi var. albiflo-				
ra Schneid	9		,,	,,
Vicia amphicarpa L	5	10	SVESHNIKO	v.A., 1930.
" angustifolia brachisomi-				
ca Sv		12	.33	11
" angustifolia dolichosomi-				
ca Sv	6	12	11	. 222
" jaba L	6	12	KAWAKAMI	, 1930.
, jaba L. var. megalo-				
sperma	6 1)	12) MAEDA, 19	
" hirsuta Koch	7		KAWAKAM	
sativa L	6	12	SVESHNIKO	
	7		Kawakam	1, 1930.
" sativa L. var. normalis				
Makino	7		1.8	21
" tetrasperma Moench	7		19	1)
" unijuga Al.Br	13		> 2	13
" amphicarpa L. × Vicia				
sativa L	6		SVESHNIK	ova, 1930.
" sativa L. × Vicia amphi-				
carpa L	6 or 12 ₁		15	11
sativa L. × Vicia angus-				
tifolia dolichosomica				
Sv	$4+\frac{4}{2}$		27	.0
Lathyrus aphaca	7		Corti, 193	30a.
maritimus Bigel	7		Kawakax	n, 1930.
odoratus	7		13	"
" odoratus L	7	14	Maeda, 1	930a.
Pisum arvense L	7	14	Lurkov,	1930.
" elatius Bieb	7	14	,,	,,
3)				

¹⁾ One pair of chromosomes in the root-tips and also in the heterotypic division of the pollen mother-cells is longer than the other 5 pairs.

LEGUMINOSAE (continued)	п	2n	
Pisum (continued)			
Pisum fulvum Sibth	7	14	Luikov, 1930.
humile Boiss	7	14	22
Jomardi Schrank	7	14	9 12
, sativum	7 1)		Hammarlund & Hakansson, 1930.
		14	Levitsky, 1930.
	7	14	KAWAKAMI, 1930.
sativum L	7	14	Lutkov, 1930.
and rogue)		14	Bunten, 1930.
sativum L. F_1 , F_2 , F_3 .	7	14	I ******* 1020
Glycine Soja Benth. 2)		40	Lutkov, 1930.
Canavalia ensiformis D.C	20	40	Kawakami, 1930.
	11	22	,,
Phaseolus lunatus L. 3)	11	22	27
" radiatus L. var. au-	1 1	20	
rea Prain	11	22	
" radiatus L., var. typi-	4.4	22	
cus Prain 4)	11	22	n n
" vulgaris L. ⁵)	11	22	23
Vigna sinensis Endl	12		13
" sinensis var. Catiang			
NAKAI	12		9
" sesuquipedalis A. I. Pier-			
TERS	12		n ::
" sesuquipedalis A. I. Pier-			
TERS Var. melanophthal-			
mus Nakai	12		19 73
" sesuquipedalis A. I. Pier-			
ters var. purpurascens			
Nakai	12		:5
Dolichos Lablab L	11		2) 21
GERANIALES			
RUTACEAE			1000
Ruta patavina L	9	13	CAPPELLETTI, 1930.

¹⁾ Of 45 plants (cross progeny of F₂ plants used by HÅKANSSON, 1929a (GAISER 1930b) with a double recessive) 19 had 7 free gemini and 26 had 5 gemini and a ring or chain of 4 chromosomes.

²) For 35 varieties examined the haploid number was found to be 20. Two varieties were examined somatically.

^{*)} For 5 varieties examined the haploid number was found to be 11. Two varieties were examined somatically.

³⁾ For 5 horticultural varieties examined the haploid number was found to be 11. One variety was examined somatically.

^{5) 4} horticultural varieties were examined.

EUPHORBIACEAE	11	2n	¥ 7	1020	
Daphniphyllum macropodum Miq.	16		VENTURA,	. 1930.	
EUPHORBIA 1)					
Subgenus Tithymalus					
Section Esulae			**	. (7 17	1020
Euphorbia corollata		18	HARRISON		
" helioscopia		18	,,	** **	"
., platyphyllos		18	11	** **	,,
terracina		18 and 36 ²)	**	0 31	"
" verrucosa		18	**	., .,	"
., welwitschii		18 and 36 ³)	n		21
RHAMNALES					
RHAMNACEAE					
Zizvohus sativa GAERTN. Var.					
inermis	13	26	CHIARUGI	, 1930b.	
VITACEAE					
Vitis labrusca		38	GHIMPU,	1930.	
, quadrangularis Wall.					
(Cissus quadrangularis					
Linne.		4453	**	**	
, riparia		38	,,	.,	
" riparia var. Gloir de Mont-					
pellier	19		Negrul,	1930.	
,, riparia var. Grand Glabr	19		**	19	
" riparia var. Scuppernong	19		11	12	
" rupestris var. du Lot	19	38	• • •	17	
,, vinifera		38	GHIMPU,	1930.	
Vitis vinifera					
French varieties:					
Chasselas rose	19	38	NEGRUL,	1930.	
Grand Noir d. C		38	11	,,	
Malaga bleu	19		,,	. ,,	
English variety:					
var. Muscat d'Hamburg	19		.,	**	
Caucasian varieties:					
var. Otzhanure Sapere	19		12	0	
" Rka tzitel (Kahetia)	19		12	••	
, Rka tzitel (Kutais)	19		**	17	
Bessarabian varieties:					
var. Alemtchak	19		,,	17	

Classification is according to Engler & Prantl.
 Some tetraploid cells were found scattered singly amongst diploid cells of both periblem and plerome.
 The tetraploid cells were found in rows of 10 or 12 in the outermost layers of

the periblem.

VITACEAE (continued)	İL	211	
Bessarabian varieties (continued)			
var. Plavai	19	38	Negrul, 1930.
" Serectia	19		9 9
Hybrids of American Species:			
Vitis Berlandieri × V. Riparia			
161—46	19		<i>y</i>
" Ripāria × V. Rupestris			
3309	19	38	17
" Riparia × V. Rupestris			
Сопр. 3310	19		73
European-American hybrids:			
Vitis vinifera Chasselas ×			
Berlandieri 41-B		38	D D
Vitis vinifera Chasselas Rose×			
V. rupestris (4401 Couderc)	19		D C
Vitis riparia \times Gamay (V.			
vinifera) Oberlin 595		38	
Complex hybrids:			
Condere 12	19		27 29
" 7120 (Lincecumii \times			
rupestris imes vinifera)		38	17 11
Scibel I	19		is
Seibel 128 (rupestris × Linee-			
cumii × vinifera)	19		, , , , , , , , , , , , , , , , , , ,
l'itus sp	19, 38		LAWRENCE, 1930.
MALVALES			
TILIACEAE			
Tilia argentea	ca. 40		Wallisch, 1930.
" cordata	ca. 36		2) 2)
" platyphyllos			1) 17
PARIETALES			
OCHNACEAE			
Ochna serrulata Walp		35	CHIARUGI, 1930c; CHIARUGI &
Ochna serrinata WALP		90	Francini, 1930.
CISTACEAE			I KAROLNI, 1700.
Cistus sp	8		LAWRENCE, 1930.
VIOLACEAE	٠		Zawamou, 1900.
VIOLACEAE			
Viola Riviniana Reiche. 1)	20		West, 1930.
Section Nominium	با ت		,, 201g + 200.
Viola cucullata Arr	27	54	Bamford & Gershov, 1930.
r rom cacamant All	-1	UT	washing to the state of the sta
Which could be not be a second of the second			

 $^{^{1})}$ Two patches of wild plants were investigated, one being a patch of $\it Viola~Riviniana~var.~nemorosa~(N.~W.~and~H.).$

	n	2n				
VIOLACEAE (continued)	11	211				
Viola (continued)	d'i					
Section Nominium (continue	20	40	Bamfor	n & Gr	RSHOY.	, 1930.
Viola elatior FRIES	22	44				
" incognita Brainerd	12	24	,,	,,	12	0
" lanceolata L	12	24	12	**	,,,	**
" pallens (Banks) Brai-		0.4				
NERD	12	24	**	**	11	٠,
, silvatica Fries. (= syl-		10				
vestris)	20	40	"	"	**	,,
" striata AIT	10	20	**	**	> 2	**
Subgroup Curvo-peduncu-						
latae						
Viola collina Besser		20	Miyaji,	, 1930a	•	
" grypoceras A. Gray var.						
exilis Nakai		20	,,	1)		
" grypoceras A. Gray var.						
purpurello-calcarata						
Makino		20	"	1)		
" Hideoi Nakai		20	,,	15		
,, odorata L	10	20	,,	11		
Subgroup Plagiostigma						
Viola mandshurica W. BCKR.						
var. plena		48	1)	,,		
" Savatieri Makino		36	13	**		
soeulensis Nakai		48	31	**		
" eizanensis $ imes V$. mands-						
hurica		36	**	13		
" mandshurica × V. chae-						
rophylloides		36	.,	,,		
Subgroup Stolonosae						
Viola repens Turcz		24	1,	- 11		
Section Melanium						
Viola orphanidis Boiss. (from						
Lausanne)	10	20	CLAUSE	N, J.,	1930.	
- + 1 - willia /from Edin				,		
burgh Bot. Gard.)	10+11	21	1,			
	-0 ; -1		,,	,,	.,	
spring		20, 21, 2	22 "	.,		
Wittrockiana GAMS.		,, .		,,	٠,	
(= Pensée) 1)		24 2) Miyaji	. 1930/	ı.	
(— Tensee) /			,	,		

Seven varieties were studied: Himmelskönigin, Kaiser Wilhelm, Prinz Heinrich, Märzzauber, Goldelse, Nordpol, Eiskönig.
 In the pollen mother cells of Märzzauber 25 was once found as the haploid

number.

Piola hybrid	E (continued) is: for Fries. × V, stria-	n	2n				
	Ait		30	Bamfori	à & G	ERSHO	r. 1930.
las	rceolata L		34	31	,.	19	1.5
V.	cucullata Air atica Fries. × V.		39	32	**	1.7	b)
	iata Ait		30	"	,,	13	"
Carica pa	paya	9		LINDSAY	, 1930	D.	
MYRTIFLO MYRTACE							
Myrtus co	RACEAE	11 1)		GRECO,	1930.		
Oenotheru	biennis München,						
	albicans, rubens	$\frac{14^{-2}}{2}$		CLELANI	80	EHLKE:	rs, 1930.
* ***	biennis sulfurea Han-						
	nover	$\frac{14^{-2}}{2}$,,	1)	***	13
13	cana DE VRIES (Se-			***		1605	
	condary form)	$\frac{14+1}{2}$ small one	14+1/2	Håkans	SON,	19306.	
	cana de Vries (se-	sman one					
**	condary form) one						
	plant	$\frac{14^{-4}}{2}$		Håkans	son,	1930c.	
"	Cockerelli, curtans.						
	clongans	14 5)		CLELAN	р&С)EHLKE	rs, 1930.
"	compressa		28	A. Hey:		en by I	E VRIES),
11	curta Heribert						
	Nilsson	$\frac{15^{-6}}{2}$		Håkans	sson,	1930c.	

In the endosperm the triploid number 33 was found.
 Arranged as a ring of 6 + a ring of 3.
 Arranged as an open chain of 11 with the small chromosome (a half) at one end of it + 2 pairs of chromosomes.
 Arranged as a chain of 10 + 2 pairs of chromosomes.
 Arranged as a ring of 14.
 Arranged as an open chain of 11 + 2 pairs of chromosomes.

OENOTHERACE:		n	2n	
Oenothera (continue Oenothera depend		15 ¹)		HAKANSSON, 1930c.
27	·s	7 ²) 14 ³)	14	" 1930 <i>b</i> .
" aistans		2		
twa ne is	s		14	GATES & GOODWIN, 1930.
" ,	ted tips)	7 2		Davis & Kulkarni, 1930.
,,	flora (DE s) acuens. trun-			
		14 ⁴)		Cleland & Oehlkers, 1930.
,,	ri	7		Weier, 1930.
"	ri, ^h Hookeri. keri	7 5)		CLELAND & OEHLKERS, 1930.
	ckiana	,	14	LEVITSKY, 1930.
		14 ⁶)		Capinpin, 1930b, Weier, 1930.
**	ckiana (DE s) velans, gau-			
		14 ⁶)		Cleland & Oehlkers, 1930.
"	rckiana cruciata			
	LKERS) velans.	14 7)		3 g u 9
**	rckiana mut.		15	W 1020
	nis		15	DE VRIES, 1930.
latifr	ons	7		Emerson, 1930.
,,	rckiana mut.	14 7)		Hàkansson, 1930b.

¹⁾ Arranged as a chain of 13 + 1 pair of chromosomes.

²⁾ Generally arranged as 7 pairs. Often members of a pair were open and even separated as univalents.

³) Arranged as a ring of 8 + 3 pairs of chromosomes.

⁴⁾ Arranged as a ring of 14.

⁵⁾ Arranged as 7 pairs of chromosomes.

⁶⁾ Weier (1930), Cleland & Oehlkers (1930) found the chromosomes arranged as a chain of 12 plus one pair. Capinpin (1930a, b) found the chromosomes in two or more circles, never in a single one.

7) Arranged as a chain of 12 plus 1 pair of chromosomes.

FNOTH	ERACEAE (continued)	n	2n	
	continued)	**		
	a Lamarckiana mut.			
	rubrisepala a	$\frac{14^{-1}}{2}$		Hakansson, 1930b.
41	lata DE VRIES (from			
	ilavescens)	$\frac{15^{-2}}{2}$		" 1930 <i>c</i> .
,,	lata HERIBERT NILS-			
	son (from liquida	हो		
	and from lata × La-			
	marckiana	$\frac{15^{2}}{2}$		22 12
71	liquida de Vries	15 ²)		<i>p</i> ,,
,,	longipetiolata HERI-			
,,	BERT NILSSON	$\frac{15^{2}}{2}$		11
11	nitens de Vries	15 ³)		n n
31	nutans Atk. & Bartl.	14 4)		Catcheside, 1930a.
,,	pachycarpa	$\frac{14^{-4}}{2}$		Rudloff, 1930b.
	pulla de Vries (se-	2		
34	condary form)	15 ⁵)		Håkansson, 1930€.
	руспосагра Атк. &			
	Bartl	$\frac{14}{2}$		Catcheside, 1930a.
		21 ⁶)		,, 1930a, b.
**	rubricalyx	14 7)		EMERSON, 1930.
		-	14	GATES & GOODWIN, 1930.
1)	simplex elongata	14 7)		Håkansson, 1930b.

¹) Generally arranged as a ring of 4 plus 5 free pairs of chromosomes but many variations of arrangement of the 5 pairs occurred.

2) Arranged as a chain of 13 plus 1 pair of chromosomes.

4) Arranged as a ring of 14.

5) Arranged as a ring of 6, 1 trivalent plus 3 pairs of chromosomes.

7) Arranged as a ring of 8 plus 3 pairs of chromosomes.

³⁾ Arranged as an open chain of 11 plus 2 pairs of chromosomes.

⁶⁾ CATCHESIDE (1930a) found one plant to be triploid with a ring of 21 chromosomes. Usually 10 and 11 chromosomes passed to either pole but occasionally non-disjunction resulted in a 9—12 division. CATCHESIDE (1930b) having reinvestigated found various combinations of univalents; ring-and-rod pairs; chain, Y-shaped, and ring-and-rod trivalents; various quadrivalents and quinquivalents.

OENOTHEI	RACEAE (continued)	n	2n			
Oenothera (CC	stricta Heribert					
Genomera	NILSSON (= 0. pui-					
	la de Vries)	15 1	H	ÅKANSSO	N, 1930¢.	
	th the vicinity	2				
	strigosa, deprimens.					
11	stringens	14 2)	Cı	LELAND (& OEHLKEI	ks, 1930.
	3H th gene 1	2				
	suaveolens, albicans.					
**	ilavens	14 ³)		,,	, ,,	11
	julio e i i	2				
	suaveolens suljurea					
"	albicans, flavens	143)		,,		13
		2				
	mutant quadrata					
,	(from O. Lamarcki-					
	ana ingeminans		21 D	e Vries,	1930.	
17	mutant quadrata ×					
17	O. (biennis × La-					
	marckiana) laeta =					
	O. Lamarckiana in-					
	geminans		14, 23 4)	**	,,	
Prima	ry mutants:					
			15	,,	"	
lata			15	**	1)	
	ida		15	,,	1)	
-	escens		15, 17	**	13	
pull	a		15, 16, 19	**	11	
-	tillans		15	,,	,,	
spat	hulata		15, 16, 17	,,	"	
Second	lary mutants:					
асия	minata		19	,,	"	
ham	nata		16	23	"	
lata	minor		15, 16, 17	,,	,,	
lati	folia		16	,,	n	
ling	та		15	,,	.,	
mil	itaris		16, 17	*2	,,	
	nifolia		15	,,	**	
rotu	ında		16	39	"	
syn	edra		17	,,	"	
1) Cana		in of 1	3 nlus 1 nai	r of chr	amosomes.	Frequent

¹⁾ Generally arranged as a chain of 13 plus 1 pair of chromosomes. Frequently variations in arrangement were observed due to the breaking of the chain into shorter lengths of 9, 7, 5, 4, and 3 chromosomes.

2) Arranged as a ring of 14.

3) Arranged as a chain of 12 plus 1 pair of chromosomes.

4) One plant had 28 chromosomes.

OENOTHERACEAE (continued) Oenothera hybrids:	n	2n				
Oenothera ammophila × (O.						
biennis × O. rubricalyx)	$\frac{14^{-1}}{2}$		GATES S	SHE	FFIELD,	, 1930.
(Oenothera bicnnis × O. rubri-						
calyx) × O, ammophila	7 2)					
(Oenothera biennis × O. Lamar-	,		**	1	**	**
ckiana) F, lacta × (O, bien-						
nis × O. Lamarckiana) F,						
velutina =						
O. ambigua	$\frac{14^{-3}}{2}$		Håkan	sson,	1930b.	
0. laeta	$\frac{14^{-4}}{2}$,,		•,	
O. velutina	14 5)		,,		D	
Oenothera rubricaly $x \times O$, erien-						
$sis F_1 \dots \dots$		7	GATES &	& Goo	DWIN.	1930.
Ocnothera grandiflora × O. Hookeri						
acuens. hHookeri	14 °)		CLELAN	0 & а	EHLKE	rs, 1930.
truncans. ^h Hookeri	14 7)		,,	"	13	**
Oenothera Hookeri × O. grandiflora						
^h Hookeri. acuens	14 6)		"	11	41	"
Oenothera grandiflora × O. La- marckiana						
acuens. gaudens	$\frac{14}{2}$ 7)		b	,,	**	.,
truncans, gaudens	14 ⁸)		,,	93 °	,	1>
acuens, velans	14 °)		"	"	**	12

¹⁾ Arranged as a ring of 8 plus 3 pairs of chromosomes. Ten plants belonging to F_2 and F_3 families showed identical conditions.

2) The 7-ring pairs were frequently interlocked and irregularities in division

Bibliographia Genetica X

were frequent.

³⁾ Arranged as a chain of 12 plus 1 pair of chromosomes.

⁴⁾ Arranged as a ring of 6 plus a ring of 8.

⁵⁾ All of the 14 chromosomes were joined but sometimes the chain was open or even broken into shorter pieces.

⁶⁾ Arranged as 2 rings of 4 plus 3 pairs of chromosomes.

Arranged as a ring of 14.
 Arranged as a ring of 10 and a ring of 4.

⁹⁾ Arranged as a ring of 6 and a ring of 4 plus 2 pairs of chromosomes.

OENOTHERACEAE (continued) Oenothera hybrids (continued)	IJ	2n				
truncans, velans	14 1)		CLELANT	. & Oi	EHLKER:	s, 1930.
Oenothera Lamarckiana × 0. grandiflora						
gaudens.acuens	$\frac{14^{-2}}{2}$		11	*1	"	**
gaudens. truncans	15 °a)		"	**	,,	17
velans. acuens	14 4)		11	**	1)	**
velans. truncans	14 1)		D		"	**
Oenothera Lamarckiana crucia-	_					
$ta \times 0.$ strigosa						
gaudens. stringens	$\frac{14^{2}}{2}$		1)	**	12	13
velans. stringens	14 4)		n	11	"	"
Oenothera grandiflora \times O. strigo	sa					
acuens. stringens	14 ⁵)		**	**	**	"
truncans, stringens	14 ¹) 2		12	ы	19	13
Oenothera strigosa $ imes$ O. Lamar-						
ckiana cruciata						
deprimens. gaudens	14 ⁶)		"	"	**	**
deprimens. velans	14 8)		**	13	73	**
Oenothera suaveolens suljurea ×						
O. Lamarckiana						
jlavens. gaudens	14 7)		"	11	11	>>
jlavens. velans	$\frac{14}{2}^{5}$,,	33	12	,,

¹⁾ Arranged as a ring of 10 and a ring of 4.
2) Arranged as a ring of 14.
3) Only one plant resulted from this cross showing 2n = 15, arranged in an open chain of 5 and one of 10.

⁴⁾ Arranged as a ring of 6 and a ring of 4 plus 2 pairs of chromosomes.
5) Arranged as 2 rings of 4 plus 3 pairs of chromosomes.
6) Arranged as a chain of 10 plus 2 pairs of chromosomes.
7) Arranged as a chain of 12 plus 1 pair of chromosomes.

OENOTHERACEAE (continued)	n	2n				
Genethera hybrids (continued)						
albicans, gaudens	$\frac{14^{-1}}{2}$		CLELAND	:O £ 0	EHLKER	s, 1930.
albicans. velans	$\frac{14^{-2}}{2}$		٠,		13	**
Oenothera Lamarckiana × O.						
suaveolens sulturea						
gaudens. [lavens	$\frac{14^{-3}}{2}$		"	1)	"	11
velans. flavens	$\frac{14^{-4}}{2}$		12	"	>>	29
Oenothera suaveolens × O.Co- ckerelli						
flavens. elongans	14 ⁵)		93	***	1)	12
albicans. clongans	$\frac{14^{3}}{2}$		29	33	22	"
Oenothera Cockerelli × O. suaveole	1128					
curtans. flavens	14°)		,,	,,	1)	2.5
Oenothera suaveolens sulturea ×						
O. strigosa						
flavens. stringens	14 ⁶)		,,	12	*;	**
albicans. stringens	$\frac{14^{3}}{2}$		**	3.9	,,	,,
Oenothera strigosa $ imes$ O. snaveo-						
lens sulfurea						
deprimens, flavens	$\frac{14^{-8}}{2}$		>)	Ð.	33	23
Oenothera (r — biennis × pa- chycarpa)						
^h albisubcurva	14 7)		Rudlof	F, 193	Ob.	
Oenothera (suaveolens × pachycar	ра)					
Salbisubcurva	14 ⁷)		,,	,	1	

Arranged as a ring of 6 plus a ring of 8 chromosomes.
 Arranged as a ring of 14.
 Arranged as a chain of 12 plus 1 pair of chromosomes.
 Arranged as 2 rings of 4 plus 3 pairs of chromosomes.
 Arranged as a ring of 8 plus 3 pairs of chromosomes.
 Arranged as a ring of 4 plus 5 pairs of chromosomes.
 Arranged as a ring of 14 chromosomes.

	23	2n		
OENOTHERACEAE (continued)	AL			
Ocnothera hybrids (continued) Ocnothera (pachycarpa × r—La-				
marckiana).	14 1)		RUDLOFF,	1930b
auctivelutina	2			
Oenothera (r — muricata × pa-				
chycarpa)				
rigidisubcurva	$\frac{14^{-1}}{2}$		13	**
Oenothera (r — Lamarckiana ×				
pachycarpa)				
subourvielutina	14 1)		"	21
Oenothera [(r — biennis × pa-				
chycarpa) balbisubcurva × sua-				
veolens]				
L. albiflava	$\frac{14^{2}}{2}$		D	**
Oenothera (pachycarpa $ imes$ Hooker	i)			
Hookeriaucta	14 3)			49
Oenothera (suaveolens × pachycarpe	a)			
flavisubcurva $ imes$ R-biennis .	143)		*)	**
•	2			
Oenothera (suaveolens × pachycarpe	a)			
flavisubcurva × R-biennis=				
MB, mB, Mb, and mb ru-				
bitlava	14 4)			*>
	2			
Oenothera (suaveolens $ imes$ pachycarpa	t)			
MmBb flavisubcurva	$\frac{14^{-5}}{2}$		1)	J
Oenothera (suaveolens × pachycarpe	a)			
MmBb flavisubcurva (selfpe	01-			
linated)	$\frac{14^{-5}}{2}$		•	
Oenothera (suaveolens × pachy-				
carpa)				
MmBb flavisubcurva × pa			**	
carpa	14 5)			
	2			

¹⁾ Arranged as a ring of 14 chromosomes.
2) Arranged as a chain of 12 plus 1 pair of chromosomes.
3) Arranged as a chain of 10 plus 2 pairs of chromosomes.
4) Arranged as a ring of 8, a ring of 4 plus 1 pair of chromosomes.
5) Arranged as two rings of 4 plus a ring of 6 chromosomes.

	RACEAE (continued)	B	2n		
	MMBb flavisubcurva				
	z pachycarpa	14 1)		Rudloff,	1930 b .
	mmBb flavisubcurva	-			
	z pachycarpa	14 1)		•,	93
	bbMm flavisubcurva	-			
	× pachycarpa	14 1)		.12	24
	BBMm flavisubcurva				
	× pachycarpa	$\frac{14^{-1}}{2}$		22	12
	BBMm flavisubcurva				
	× pachycarpa	14 ²)		33	19
,,	Lamarckiana × 0.				
	rubricalyx (velans.				
	hlatifrons) F ₁	14 °3)		Emerson	, 1930.
**	$Lamarckiana \times 0.ru$ -				
	bricalyx (velans.				
	$hlatifrons$) $F_g(2 types)$	$\frac{14^{3}}{2}$, 7		13	"
17	Lamarckiana × 0.				
	rubricalyx (hlati-				
	frons. hlatifrons) F2	7		,,	>>
19	Lamarckiana × 0.				
	latifrons F_2 (gaudens.				
	hlatifrons) (2 types)	$\frac{14^{3}}{2}$, 7	Ex	derson, 1	930.
,,	rubricalyx (modified				
	velans) × O. La-			•	
	marckiana F ₁ gaudens	$\frac{14^{-4}}{2}$		**	23
UMBELLIF	LORAE	_			

UMBELLIFE RAE

SCANDICEAE 5)

(a) Scandicinae

Myrrhis odorata var. aurea . .

SCHULZ-GAEBEL, 1930.

Arranged as a ring of 6 and a ring of 4 plus 2 pairs of chromosomes.
 Arranged as a ring of 6 plus 4 pairs of chromosomes.
 Arranged as a ring of 8 plus 3 pairs of chromosomes.
 Arranged as a chain of 12 plus 1 pair of chromosomes.
 Classification is according to DRUDE (1897).

UMBELLIFERAE (continued)	11	2n			
Scandiceae (continued)					
(a) Scandicinas (continued)					
Chacrophyllum aureum L	11		SCHULZ-C		
" bulbosum L	11		21	0	**
Anthriscus cerefolium Hoffm	9		**		
" [jumarioides	9		**		
" silvestris (L.) Hoffm.		16	MELDERI		
Scandix Pecten Veneris L		16		11	
	ŝ		SCHULZ-C	laebel,	1930.
(b) Caucalinue					
Torilis anthriscus (L.) GMEL	8		MELDERI	s, 1930.	
" heterophylla Guss		15	**	12	
Smyrnieae					
Conium maculatum L	8		Nordhei	м, 1930	
Ammineae					
(a) Carinae					
Bupleurum longifolium L	ô		SCHULZ-C	JAEBEL.	, 1930.
" rotundifolium L	8		13	**	27
	11		MELDERI	s, 1930.	
Petroselinum sativum Hoffm	11		SCHULZ-	FARBEL	, 1930.
Cicuta virosa L. var. univalens m		22	MELDER	is, 1930	١.
" virosa L. var. bivalens m.	22		**	, .	
Ammi majus L	11		Schulz-	AEBEL	, 1930.
,, visnaga Lam	11			**	2+
Carum Bulbocastanum Kocu	11		.,		.,,
" Carvi L	11		17	2.9	
			MELI	eris, l	930.
" rigidulum Koch	11		Schulz-C	SAEBEL	, 1930.
Aegopodium Podagraria L	22		MELDERI	s, 1930.	
Pimpinella anisum L	9		Schulz-	AEBEL	, 1930.
" magna L	9				**
" peregrina L	9		**	,,,	**
" saxifraga L	à		11	*1	71
Sium Sisarum L	10		13	>>	
(b) Seselinae					
Seseli tenuifolium Led	11		1)	,,	0
Foeniculum vulgare Mill		22	MELDER	ıs, 1930	
Anethum graveolens L	11		"	,,	
Oenanthe pimpinelloides L	11		SCHULZ-	GAEBEL	., 1930.
Aethusa cynapium L	11		**	**	1+
Meum anthamanticum Jacq	11		21	13	11
Selinum carvifolia L	11		17	,,	**
PEUCEDANEAE					
(a) Angelicinae					
Levisticum officinale Koch	11		MELDER	ıs, 1930)

UMBELLIFERAE (continued)	n	2n		
PEUCEDANEAE (continued)				
(a) Angelichnae (continued)				
Angeliea Archangeliea L. subsp.				
littoralis (Fries.) Thelleng	11		Schulz-Ga	EBEL, 1930.
Angeliou situestris 1		22	MELDERIS,	
(b) Ferutinae				
Dorema Aucheri Boiss	11		Schulz-Ga	.бвет., 1930.
Peucedanum graveolens Koch	11			,
Oreoselinum			*1	21 11
Mönch	11			
" falustre (L.) Mönch.	11		,,	** 31
,, / (17.) /17.) /17.			MELDER	., ., ., ;
, salivum Hoffm	11			.ebel, 1930.
, verticillare Koon,	11		SCHULZ-GA	
Pastinaca sativa L	1 1	22	37	,, ,,
DAUGEAR		22	MELDERIS,	1930.
Dancus carola L	11		21	,,
CORNACEAE				
	11		MEURMAN,	1930.
Aucuba chinensis	8	,,	**)	21
ERICALES				
ERICACEAE				
Emphodendron i)				
Subgenus I. hurhododendro	n			
Section I. Leiorhodion				
Rhododendron catawbiense	13		Sax, K., 19	9306.
catawhiense Mr-			2,,,,,,	
CHAUX	12		Bowers, 1	930
maximum	13		Sax, K., 19	
Section II. Lepipherum			trans, this is	.000,
Rhododendron carolinianum.	13			
Section IV. Rhodorastrum	10		19 1)	**
Rhododendron dauricum	13			
	10		23 23	"
Subgenus III. Anthodendron Section I. Tsutsutsi				
Khododendroù obtusum japoni-	* ^			
cum	13		D D	15
" obtusum Kacmp-				
feri	13		11	"
yedoense pouk-				
hanense	13		33	17
Section II. Sciadorhodion				
Khododendron reticulatum	13		** 37	**
" Schlippenbachii.	13		11 17	21

¹⁾ Classification is according to Rehder (1927).

ERICACEAE					
	on (continued)				
	Anthoden-				
dron (cor					
Section III. 1					
Rhododendr	on c anadense	26	SAX,	K., 1	9306
**	Vascyi	13	*)	1)	**
	'entanthera				
Rhododendr	on arborescens	13	19	**	**
31	calendulaceum .	26	Q	* 3	*1
25	japonicum	13		*1	**
12	roseum	13	**	**	* 1
>>	viscosum	13	**	1)	
Rhododendron					
Rhododendr	on albicans (R. mol-				
	le imes R, occiden-				
	tale)	13	11	19	**
**	gandavense of				
	Arnold Arbore-				
	tum (American				
	uzalca \times R, lu-				
	teum)	13	*2		
23	laetevirens $(R,$				
	carolinianum				
	× R. ferrugi-				
	ncum)	12+2 ₁	10	11	i.i
	perspicum (R.				
	catawbiense ×				
	R. maximum of	r			
	$R.\ ponticum)$.	13 or	1	.,	- 1
		$12 + 2_1$			
**	pravcox var.				
	Early Gem (R.				
	dauricum $\times R$.				
	ciliatum)	13	,,,	15	7.1
**	purpureum (R.				
	catawbiense ×				
	R. maximum or				
	R. ponticum) .	13	2+	4)	197
>7	Smirnovii hybrid				
	of Arnold Ar-				
	boretum $(R.$				
	Smirnovii ×				
	Catawbiense				
	hybrid)	12+21	,,	.,	.,

ERICACEAR	(continued)	n	211		
	hybrids (continued)				
	Authodendro	1.1			
(continued)					
Section IV. 1	'entauthera				
icontinued)					
Rhododendr	ou viscosepalum (R.				
	molle & R. vis-				
	cosum)	12+21		Sax, K.	. 1930b
	occidentale × R.			,	,
	calendulaceum, ca	.13+131			
.,	occidentale > R.			1) 1)	*11
	juponicum	13		"	
PRIMULALE	S				
PRÉMULACE	EAE				
Premicea 1)					
Subgenus I.					
Section Gra	ndis				
	ondis		44	BRUUN,	1030
Subvenus II.			-2-2	DROOM,	1950.
Section Aur	1.0 1.1 0				
	ricula		56(?)		
	tuceseens		56(?)	2)	"
	sidd		, ,	13	"
	ergisata		64(?)	"	77
			90(?)	13	3.0
Subgenus III.	иіни		64(?)	**	7.7
	ticillata				
	ribundu		18	23	11
	icecosis"		36	**	2.3
	rticilluta		18	,,	23
Subgenus IV					
Section Ver					
	tion		22	12	**
	terockroma		22	22	33
	thar		22		21
	uopkylla		22	1,	33
	ucrocalys		22	2)	2.2
, ,	endoctation		22	,,,	2.9
,. £10°	ris		22	12	22
. Th	igaris		22	**	3.5
Section Meg	gaseaetolia				
Primula ma	equavacjotia		22	2.9	23

¹⁾ Classification is according to Smith & Forrest (1929).

PRIMULACEAE (continued)	n	2n		
PRIMULA (continued)				
Subgenus V.				
Section Cortusoides				
Subsection Geranioides				
Primula geraniifolia		22	BRUUN.	1930
		22		
, heucherifolia		22	**	
,, latisecta		22	- 11	
Subsection Septemlobae		~ .		
Primula Maclarenii		24	7 ¥	.,
, $mollis$		24	11	13
" seclusa		24	**	11
septemlobu		24	17	2.5
Subsection Paulianae				
Primula Pauliana		24	12	**
Subsection Eucortusoides				
Primula cortusoides		24	**	**
" lichiangensis		24	**	• • •
" polyneura		24	,,	*1
" saxatilis		24	• • • • • • • • • • • • • • • • • • • •	1,
"Sieboldii		24	13	"
Veitchii		24	**	.,
Section Reinii				
Primula Reinii		24	31	13
Section Pycholoba				
Primula pycnoloba		24	**	
Section Obconica				
Primula obconica	12	24	71	.,
" sinolisteri		24		
Werringtonensis		24	"	
Section Malacoides			"	''
Primula estusa		13	.,	
**		18	.,	/3
	9	13	**	**
" malacordes	7	10	19	14
Primula calciphila		24		
		24	5 y	21
" sinensis	10	24	0.0	1020
	12	1015	Sомме,	
" sinensis var. gigas		48(?)	BRUUN,	1930
" sinensis (tetraploid) . 1				
22	2-20 ()		Söмме,	1930.

 $^{^{1})}$ Quadrivalents were found in most cells but as a rule not more than 1 or 2. The majority of the chromosomes were arranged as bivalents.

PRIM	ULA	HAE (continued)						
Primu	6A (00	ontinued)						
Subger	nus V	Ī.						
Section	т В п	Hatae						
Prin	uuta 1	Forrestii			24	BRUUN,	1930.	
,	, ,	vdotens			24	**	11	
,		ија			24	,,	**	
Subger	uis V	11.				,,	**	
Section	a Ре	tiolares						
Prin	nula 1	Winteri	*		22	,,	**	
Subger	nus V	111.				,,		
Section	n N I	vales						
A, I	rimu.	la Ellisiae			44	,,	11	
	22	leucops			44	,,	.,	
		farryi			44	**	,,	
	10	Kusbyi			44	7.5	**	
B.		Maximowiczii.			22	n	,,	
	.,,	obliqua			22			
	+ 1	sceehuanica			22	**	,,	
		tangulica			22	**	.,	
Ċ.		macrophyilu			22	,,	,,	
().	*1	chimantha			22	15	,,	
		melanops			22		,,	
		Purdom(i)			22	19	11	
	- *	rus wold			22	,,	,,	
		sinoplantaginea .			22	**	17	
Section	e Ro	tundifolia						
Prb	nula t	Gambeliana			22	,,	*1	
Section	n dine	ndelabra						
A. F	rimie.	la ianthina			2.2	.,	**	
В.		anisodora			22	13	**	
	1.7	aurantiava			22			
		Bresiana		11	22	**	17	
					22	RICHARD	son, 19	30.
		Bulleyana		11	22	BRUUN,	1930.	
					22	RICHARD	son, 19	30.
	1,	hurmanica		11	22	BRUUN,	1930.	
		chungensis			22	,,	**	
	, ,	Cockburniana .			22	BRUUN,		RICHARDSON,
						1930.		
	* 4	kelodoxa			22	BRUUN,	1930.	
		imperialis			22	,,	31	
	13	japunica			44		1930;	RICHARDSON,
						1930.		
	12	melanodonta(?) .	,		22	BRUUN,	1930.	

I MINIORISONALISA	12	211			
Primula (continued)					
Subgenus VIII. Section Cande-					
labra (continued)		er en	73	1000	
B. Primula Miyabeana		22 22	BRUUN,		
Moorsheadiana			*)	**	
" Poissonii		22	٠,		RICHARDSON,
" pulverulenta		22	., 1930.		NIGHAR POSES,
" serratifolia		22	BRUON,	1930.	
" Smithiana	11	22	**	11	
Wilsonii		22	**	**	
"Aileen Aroon" (P.					
Bulleyana \times P.					
Beesiana)		44	RICHAR	DSON,	1930.
" Red Hugh" (P. pul-					
$verulenta \times P$.					
$Cockburniana F_1$).		22	,	,	1)
Section Sikkimensis					
A. Primula secundiflora		22	BRUUN,	1930.	
" vittata		22	2 4	11	
B. Primula firmipes		22	.,,	12	
" flexilipes		22	4.0	19	
, Florindae		22	12	**	
" microdonta alpicola		22	14	**	
" microdonta violacea		22	11	**	
" prionotes		22	11	12	
" pseudosikkimensis.	11	22	12	,,	
" pudibunda		22	71		
sikkimensis		22	11	12	
" Waltonii		22	21	21	
Subgenus IX.					
Section Capitatae					
Primula capitata		13	19	11	
" crispata		18	.,	*;	
" lacteocapitata		13	,,	,,	
" Mooreana		18	11	**	
" . sphaerocephala	9	18	12	12	
Section Denticulata					
Primula crispa		44	12	2.9	
" denticulata	11	22	,,	"	
" erythrocarpa		22	,,	,,	
Section Muscarioides					
Primula apociita		40	11	22	
" atricapilla		20	.,	,,	
*					

PRIMULACEAE (continued)	n	2n		
Primuta (continued)				
Subgenus IN. Section Musca-				
rioides (continued)				
Primuta bellidifolia		20	Bruun,	1930.
" сегина		20	**	17
" cyanantha		40	,,	,,
$, deflexa(?) \dots$		40	,,	11
,, lepta		40	1)	,,
, Littoniana	10	20	**	1)
" Menziesiana		40	1)	,,
" muscarioides		40	,,	"
" pinnatifida		20	.,	,,
Section Soldanelloideae				
Primula nutans		20	27	,,
" Reidii		20	,,	,,
Subgenus X.				
Section Cuncifolia				
Primula suffrutescens		44	13	,,
Section Innyatii				
Primula Ineyalii		16	>1	2.5
Section Auriculata				
A. Primula olgida		44	.,	,,
lutvola		44	,,	,,
B. Prímula elliptica		22	,,	27
n rosea		22	,,	.,
Section Minutissimae				
Primula reptans		22	,,	**
Subgenus XI.				
Section Souliei				
Prímuta rapicola		16	,,	· ·
Section Farinosae				
Subsection Stenocalyces				
Primula blandula		16	**	.,
" caldaria		16	13	.,
Knuthiana		16	,,	.,
" sienocalyx,		16	"	0
Subsection Enfarinosae				
Primula capitellata		72	1>	
, exigua		18	**	.,
" jarinifolia		18		> 9
, farinosa	9	18	,,,	,,
., farinosa Warei		72		
, Faurici		18	22	.,
" frondosa		18	,,	,,
			-	

	:	77	2n			
PRIMULACEAE (cont	intied)	1.1				
PRIMULA (continued)						
Subgenus XI. Section I	rarino-					
sae (continued)						
Subsection Eufarin	ıoşae					
(continued)			36	Brouw.	1533	
Primula longiflora .			72			
" magellanica				19	**	
,, scotica			54	12	*1	
" scotica scan	dinavica .		72	**	*1	
" stricta			126	**	3.9	
Subsection Sibiric						
Primula chrysopa .			20	17	11	
" fasciculata			1.5	12	- 1	
,, involucraia			44	2.9	**	
" sibirica .			22	19	13	
" tibetica			20	5 11	12	
" yargongensi	is		20	+7	2.7	
Subsection Glabra	е					
Primula Genestieria			16	13	10	
" glabra			16	11	4.5	
Section Yunnane						
Primula Yunnanens			22	*1	*)	
Aretia alpina L			36	CHIARU	ы, 1930	a, d
Vitaliana primulae						
TOL			32	*1	1 >	5.9
CONTODIAL						
CONTORTAE						
OLEACEAE		14		D'MARZ	1.430	
Forsythia europaca.		14				
"	a	1 *3				
	a var. den-					
,		14		1+		
,	a var. pri-					
		14		1.	71	
	a var. spec-					
		14		**	1.0	
" intermedi	a var. vitel-					
lina		14			3.6	
" ovata		14		**		
" suspensa.		14		**		
" suspensa	var. atro-					
		14		i g		
" suspensa	var. deci-					
		1.4		1.5	**	
•	var. Fortu-					
		14		12		

		11	2n			
OLEACE	IAE (continued)					
Forsythic	(continued)					
Forsyt	hia suspensa va c, pallida	1 4		O'M.	ARA,	1930.
	suspensa var. pubes-					
	cens	1.4		•		
11	suspanse var. Siebol-					
	dii. ,	1.4		٠,		
11	suspensa var. sus-					
	pensa	14				17
**	virīdissima	14		,		,,
4)	viridissima var. ko-					
	reuna	14		,,		*>
Syringa	1)					
Subgenn	s Eusyringa					
(K. Kc	оси)					
Group V	illosae (Schneid.)					
Syring	a Henryi (Eurèce) (S.					
	viliosa × S. fosikava)	23		Sax,	К.,	1930a.
	fosikuea		46	,,	- >>	,,
		22	•	Tisc	HLE	R, 1930.
Ь	Komarowi,	23		San,	К.,	1930a.
*1	Sweginzowii	23		2.3		11
-	tomentella2	3 or 24		19	17	23
10	villasa 20	3 or 24			13	1)
1.5	Woljii		46	19	22	+1
12	yunnanensis	24 2)	69 ²)	17		17
Group V	ulgares (Schneid.)					
Syrine	u chinensis (S. rothoma-					
	vensis) = (S. persica-					
	tacistiata >. S. vulga-					
	riv)	$12 + 12_1$:1	- 11	**
		2				
1	chinensis var, cucullata ca	$.12+12_{1}$		2.2	12	4.5
		2				
7.1	chinensis var. Sauge-					
	ana	. $12 + 12_1^3$)		.,	21	ü
**	Mevert	23				
4,	microphylla 23			.,	**	19
4,	copyregues	(-)		13	21	"

Classification is according to Rehder (1927).
 In one plant there were 24 chromosomes at metaphase and in another plant there were 63 chromosomes in the root-tips.

²) At diakinesis there were about 39 chromosomes but at metaphase usually 24 to 26, half of which were bivalents and half univalents.

DLEACEAE (continued)	1;	211			
Syringa (continued)					
Subgenes Eusyringa (K.					
Koon) (continued)					
Group Vulgares (continued)					
Syringa oblata Giraldii	25, 24 1)		S_{AB} , K .	, 193	30a.
Palibiniana	24		21 12		
" persica	441		Tischill	ek, l	930.
3) 2	2				
	351 4)		Sax, K	, 19.	Buil.
	2				
persica vor. alba	361 2)				
" persua var. arow	2		22 21		,,
" persica var. laciniata .	36: 3)		21 /1		.,
" persua var. morman.	2				
. pinnatifolia	24		,, ,,		e)
hubocome	24		33 13		
nalastinas	23				0
Instational Lachmenta	23				
" vulgaris	22		Tisoni		1930.
" vulgaris var. Beranger.	24		Sax, K	., 19	30n.
" vulgaris var. Dr. Nobbe	23 ÷ 1 :		*9 12		.,
" vulgaris var. Princess			**		
Marie			,, ,,		
			,, ,,	,	
Subgenus Ligustrina (Rup			Тізснь	Tile.	15/30.
Syringa amurensis	23 or 24		Sax, K		
• 40 000					
" japonica			11		
Syringa (not classified in groups)			Tischi.	67.12	1930
Syringa Emodi			O'MAR		
Ligustrum sp	44		7.2 DEALS		2 451 to 4
TUBIFLORAE					
LABIATAE					
GALEOPSIS					
Subgenus Ladanum Reiche					
Galeopsis angustifolia GAUDIN			Мбхга	ang,	1950
" Ladanum L					.,
" ochroleuca Lamarck			i)		
" pyrenaica Bartt					
D P. J. C.					

¹⁾ There were apparently 24 paired chromosomes at diakinesis but only 23 could be counted at the heterotypic metaphase.

 ²⁾ The 36 single chromosomes behaved irregularly at reduction and the pollen was sterile. It was therefore thought to be a hybrid.

³⁾ In one cell about 44 chromosomes were counted.

1 4 10 2 5 77 4 7	O to buting als		2		
	E (continued) (continued)	17	211		
	Tetrahit Raicus.				
4.5	bifida Boenn. 1)	8		MÜNTZING,	10306
CHILDITSIS	pubescens Bess	8		MUNIZING,	19300,
**	pubescens (2 biotypes)	0	16	**	2.7
"				31	"
- 0	Reuteri Reichb. F.	3	16	>>	1020
1.5	speciosa Mill. 1)	3	1.7	**	1930a.
+1	speciosa (3 biotypes).		16	**	1930b.
	Tetrahit L	3		**	1930a.
Galcopsis h					
Galcopsis	s angustifoli $a imes G$.				
	ochroleuca \mathbb{F}_1 2)	පි ⁸)		.,	**
n	Ladanum \times G. an-				
	gustifolia $\mathbb{F}_1^{(2)}$)	8		,,	13
,,	Ladanum \times G. ochro-				
	lenca $F_1 F_2 ^2$)	3		19	12
*)	Ladanum × G. pyre-				
	naica F_1 F_2 $^2)$	8	16 4)	,,	**
*1	ochroleuca × G. pyre-				
	nuica F ₁ 2)	8	16	"	1)
11	pubescens × G, speci-				
	osa F ₁	$8,7+2_1$			
		2			
		$6 + \frac{4}{2} + \frac{5}{2} + \frac{6}{2}$		"	,,
		${2}$ ${2}$			
17	pubescens & G. speci-				
	usa spont, (offspring)	16	1)	**
P4	pubescens & G. speci-				
	οsα Γ ₂ ⁵)			,,	**
19	pubescens × G, speci-				
13	osa F ₂ 5) (one plant)				
		$\frac{1}{2}$,			
		22-5-62	24		
		$2_3 + 6 + 6_2$,,	
	pubescens × G. speci-				
r i	pubescens \times G, speci- osa F_2 F_3	946,	16		1930b.
	00011919	2		39	
	Tetrahit × G. bifida				
**	F. 6)				1930a.
defended (for the parties and SMFH by to	galler and a gas whether			n	
1) The l	iaploid number was de	termined in s	everal	types of the	species.

The haploid number was determined in several types of the species.
 Chromosome affinity and reduction division was quite normal.
 This number was found in the spontaneous hybrid also.
 This number was found also in one extreme dwarf plant of the cross.
 Of 5 F₂ plants 5 were diploid and one was triploid.
 The reduction division was quite normal, though it showed some minor irregularities.

LABIATAE	1)	2n	
Galcopsis hybrids (continued)			
Galcopsis Tetrahit z G. bifida			
(F_3, F_3^{-1})	16		
	15 + 21.		
	$15+2_1,$ $\frac{1}{2}$		
	1361		MCNIZING, 1930a.
	3		
. A.T. (artifizielle Te-	4		
$trahit$ = $\{G, pubes-$			
$cons \times G$, speciosa)			
× G. pubescens	16	32	1930b.
Mentha aquatica L. (= M. hir-	10	Ų2	,,
suta L .)	13		Lietz, 1930.
a marana da 1	36(?)		
" Long't-Lin T. Thursday	9		73
" longifolia L. Hudson.	7		13
, verticillata L. $[=M]$			
aquatica \times M. arven-	0.77		
sis (M. sativa L.)]	27		17
SOLANACEAE			
Saracha umbellata		48	Krenke, 1930.
Capsicum annuum 2)	12		Hoskins & La Cour, 1930.
Capsicum annuum var, Dolmu")	12	24	Kostoff, 1930s.
" annuum var. Kam-			
$by^{(3)}$	12	24	74 95
" annuum (Dolma 🗵			
$Kamby$) F_1	12	24	H
" annuum (Dolma ×			
$Kamby) F_2$,, orange			
mutant"	12	24	291
" annuum (buds with			
abnormal pollen			
selfed)			
Plant I	12	25)-1 >3
Plant I1	11	25	24 12
			. "

Some of the extremely narrow-leaved and broad-leaved F₂ and large-flowered F₃ plants showed the same number (n == 16).

²) Four varieties described as: long red, large red, long yellow and large yellow from Messrs. Sutton & Sons were used. Also four varieties described as: pigment gros long changeant, pigment jaune dend-long d'Antibes, pigment jaune long, pigment cerise from Messrs. Vilmorin et Cie.

³⁾ Plants exposed to change of temperature showed irregular meiosis with varying numbers of chromosomes in the gametes as n, n-a, n-a, 2n, 2n+a, 3n, 3n+a and 4n, where n is any number smaller than 12.

SOLANACISAE (continued)	П	2n	
Cupsicum (continued)	10		Harrison & F. (2000) 1020
Capsicum baccatum 1)	12		Huskins & La Cour, 1930.
Section Tuberarium			
Subsection Basarthrum Brit.			
Solanum muricatum Arr		24	Rybin, 1930a.
Subjection Hyperbasar-		24	KIBIN, 1700a.
thrum Brri.			
Conveibaccuta Brir, (Colombia			
forms)			
Solanum colombianum Dun.			
var. Trianae Bitt. n. f		48	Rybin, 1930.
Pinnatisceta Rydb, Group 2			
Salanum chacoense Bitt	12		Longley & Clark, 1930.
		24	Rybin, 1930a.
Commersonii Dun	18 3)		Longley & Clark, 1930.
,	•	36	Rybin, 1930a.
соуовеанит Bukasov		36	22 22
Jamesii Torr	12		Longley & Clark, 1930.
		24	Ryein, 1930a.
Group 3			
a) Subgroup from Chile and Peru			
lowlands			
Solanum medians Bitt.			
(Of Solanum Maglia			
Schlecht)		36	Rybin, 1930a.
Solunum palustre Poerr.?		48	33
b) Subgroup from Peru and Boli-			
livia Andes			
Solanum acaule Bret, var. su-			
berinterruptum Bitt		48	22
Solunum aracc-papa Juz. n. s		24	71 19
" Bukusovii Juz. n. s		24	22
" — sp. Ситао 150		36	
sp. Curao 151		48	23
c) Subgroup of Mexican species			T 1030
Solanum ajuscoense Bukasov .	24	10	Longley & Clark, 1930.
		48	Rybin, 1930a.
" Antipovichi Bukasov	24		LONGY UNE ST. CLAPPE 1020
, Antipovient BORASOV	24		Longley & Clark, 1930.
demisssum Lindl.	24 36	48	Longley & Clark, 1930. Rybin, 1930a. Longley & Clark, 1930

¹⁾ Two varieties described as long red and long yellow.
2) Classification is according to Bitter 1912--13.
3) Irregular distribution of the chromosomes was observed.

SOLANACEAE (continued)	23	2n				
	28	211				
Solanum (continued)						
Solanum demissum i, adpresso-		72	Ryary, I	03.0		
acuminatum Bukasov		12	IZYBIZ, I	- 2004		
" demissum (, longibac-		~~				
catum Bukasov		72	17	11		
, domissum f. recurvo-		m c				
acuminatum Bukasov		72	21	**		
" demissum f. tlax pehual-						
coense Bukasov		72	**	++		
" demissum f. xitlense						
Bukasov		72	3.9			
" Fendleri Gray	24		Longley	95 C	LARK,	1936.
		48	Rybin, 1	930w		
Section?						
Solanum caldasii glubrescens						
DUNAL	12		Longley	& C	LARE,	1930.
" capsicastrum 1)	12		Huskins	& L	Cotra	, 1930.
" cardiophyllum f.						
coyoacanum Bukasov	18 2)		LONGLEY	5: €.	LARK,	1930.
" lycopersicum		24	KRENKE,	1930).	
		48 9)	Kostoff	, 193	Ģ b.	
" polyadinum Greenm.	12		LONGLEY	& C	LARK,	930.
tuberosum L.						
(commercial American varieties):					
Adirondack	24		Longlin	X 10	LARE,	1936.
American giant	24		11	.,	,,	
Beauty of Hebron	24				**	
Blue Victor	24		.,	.,		
Carman No. I	24					.,
Charles Downing	24			.,		
Cowhorn	24		**		17	1.
Dakota red	24		0	**	11	**
Early Manistee	24		*1	"	**	**
	24			17	**	**
" Ohio	24		13		1.1	**
" Rose			**	13		1,5
" Sunrise, Buist's	24		7.6	11	**	**
Garnet Chili	24		1)	**	**	1+
Green Mountain	24		**	**	1.	**
pla Irish Cobbler	24		, 1		> 1	17
2) Jersey Red Skin	24		b>	17	11	**
from :.						

long ch.
cerise frowariety is described as large berried and of unknown origin.

3) Planular distribution of the chromosomes was observed,
numbers to callus tissue of a scion of Solanum hycopersicum growing on Nicoliana and 4n, wa tetraploid cell was found.

SOLANACEAE (continued)	n.	2n				
Solanum tuberosum L. (commercial						
American varieties) (continued)						
Keeper	24		LONGLEY	St Oth	arese. I	930.
King of the Roses	24			11		,,,,
Maggie Murphy	24		**		"	
McCornick	24		21	,,	23	"
McCullock	24		* *	17	11	12
Never Rot	24		1.9	17	1)	21
Noroton Beauty	24		*1	**	,,	23
Peachblow	24		19	"	• •	**
	24		>7	17	,,	2.5
Peerless			19	19	,,	39
Poerless (Pearl)	24		1)	"	,,	2.9
Peoples	24		,,	**	3.3	**
Perfect Peachblow	24		13	"	"	>3
Pride of Multnomah	24		11	"	27	15
Prince Albert	24		**	Ð	3.5	**
Prolific	24		,,	1)	17	12
Queen of the valley	24		13	,,	**	"
Russet Rural	24		21	**	12	**
Scotch Rose	24		> 1	12	.,	2.5
Triamph	24		**	**	**	3,5
White Albino	24		91	11	٠,	**
S. A. Yellow Flesh	12		**	31	**	**
Seedling No. 43225	24		11	,,	, ,	**
" No. 43986	24		32	.,	"	
Solanum tuberosum L.						
(German varieties):						
Ackersegen	24		HEYN, I	930.		
Allaiora		43	12	**		
Alina	24		11	,,		
Allerfrüheste Gelbe	24		31	D		
Beseler	24		**	+ >		
Centifolia	24		,,	13		
Deodara	24	48	11	11		
Derfrlinger	24		3.3			
Dicke Muis		48	7.5	13		
Eigenheimer	24		11	.,		
Erdgold	24	48	1)	1)		
Erstling Duke of York	ca. 24		11	,,		
Frühe Rose	24		.,	1,		
Friiheste	ca. 24		,,	11		
Fürstenperle		43		٠,		
Gelbe Rosen	ca. 24		12	12		
Gelkaragis		48	,,	,,		
and the same of th						

SOLANACEAE (continued)	£1	2n		
Solanum fuberosum L. (German				
varieties) (continued)				
Gisevius (Prof.)		4 å	Elev.	. 1935.
Herbstrote		43		, , , , , , , , , , , , , , , , , , ,
Hutten	24	4.8	1)	11
ldeaal		48	.,	**
Imperator	24		**	1
Industrie	24	4.8		**
Johannsen (Dir.) , . ,	24	,	**	**
Jubel	24		**	
Juli	24		,.	4.8
Kartz v. Kameke	24		,,,	**
****	a. 24		**	17
Krüger (Praes.)	24		,,	17
Laurus	24		11	**
Malta	24		**	1)
Model	24		"	*
a a contract of the contract o	a. 24		**	
Parnassia	24		**	
Dome	24	48	*1	
Pruessen	24	40	1.)	.,
Prozentragis	24	4.8	**	**
Ragiszehn		48	21	
Rosafolia.	24	40		
75 15 1			**	
0.1 . 1 . 1 . 6	24	48	4.0	
0: 1:		48	11	4.0
C111 +	~ .	48	11	19
		obably	**	
(D. C.1)	24	43	**	4.4
		45	.,	**
Up to Date	_	43	21	-
	24		1+	11
	a. 24		**	**
Welkersdorfer	24		* 1	*1
Wohltmann (Prof.)		48	1)	.,
Solanum tuberosum L. native varie	eties:			
from Mexico				
one from villa Hermosa		48	RYBIN.	1930a.
from Guatemala				
one from Guatemala city		. 48	9.7	
from Colombia				
Caiceda		45	*)	43
De año		48	,,	,.
Lisarasa		48	33	.,

SOLANACEAE (continued) n	2n		
Solanum luberosum L. native varieties			
from Colombia (continued)			
Pante	48 R	YEIN,	1930a.
Tuquereña	48	13	**
18 umamed collections	48	.,	*1
funnamed collection	24	21	
from central Peru			
Chusca	24	**	.,
Cota Cnya	48	,,	11
Curao blanco	48	*1	,,
Muairuru	48	**	,,
Milagro	48	*7	••
Naranjito	48	**	**
Pampino	48	**	**
Papa amarilla	24, 48 1)	1)	,,
Papa blanca	24, 48 2)	,,	19
Pepinilla	48	11	.,
Pina	43	,,	,,
Puca papa	36	,,	,,
Runtu papa	24	17	.,
Yana mata	. 48	,,	17
Yana papa	36, 48 3)	11	**
14 unmanied collections	48		,,
I unnamed collection	24	1)	**
from south Peru			
Alalaiso	48	11	**
Aleca-huarmi	48	,,	>2
Anaibamba	48	15	**
Ancace-maquin	48	11	**
Ancace-sillon	48	,,,	*)
Copec-compadre	48	12	**
Ccohuaisure	48	11	*;
Ceompetillo	46	,,	,,,
Ceompis	48	23	77
Cosilinli	24	**	31
Censi	48	12	"
Cchecche-pfuru	36	**	,,
Chiechina	36	,,	,,
Chimo-lomo	36	,,	**
Chocllo	48	**	15
Ckeccorani	24	,,	,,,
repair formation of a construction of open construction of the			

Two forms showed 48 while ten showed 24 chromosomes.
 Three forms showed 48 while one showed 24 chromosomes.
 Three forms showed 48 while one showed 36 chromosomes.

SOLANACEAE (continued)	2n		
Solanum tuberosum L. native varieties			
from south Peru (continued)			
(kello-huaccotto	43	Ryms.	1930a
Cuculi-cintura	48	**	
Cuchillo ppaqui	43		,,
Garmendia	4.8		
Huairuru.	48		.,
Huallata	43		**
Huaman-uma	4.3		
Huana	48	,,	.,
Tacco ekehuillo	36	,,	
\$7	43	,,	
Lecke uma	48		
*******	48	.,	,,
Mayo-mostasillo.	48	17	,,
	48	.,	"
Mocketa	24	.,	"
Muru-chire	48	11	"
Muru-ecompis	36	11	**
Muru-leckecho	48		
Ocke-lomo	48	4.6	* f
Ocke-sale	48	7-1	* *
Ocke-suittu	45 45	17	4.9
Ocke-sunchehu	45 48	- 2	**
Ocke teromera		1.4	2.1
Ocke trompos	43	19	11
Orceo maleco	36	11	**
Paspa-sunchchu	4.3		14
Pispinco	36	51	11
Ppaspa sunchchu	43	11	**
Puca ecompis	48	* 1	
Puca licella	45	**	199
Puca mama	35(48)	· ·	**
Puca ñahui	48	15	*1
Puca ppitiquiña	24	*3	
Puca pullon	36	,,	
Puca-socco-huaccotto	36	**	
Puca sunchehu	48	**	- 00
Secco huaccotto	35	1.4	44
Socco mama	43		**
Suittu	35	1)	
Sunchehu tacella	48	9.5	**
Tecomima	43	*1	-1
Trompos	43	,,	- 0
Ttata	43	,,	,,

SOLANACEAE (continued) a	2n		
Sofanum tuberosum L. native varieties			
from south Peru (continued)			
Tumbos	43 R	YBIN,	1930æ.
Una-reompis	48	>>	
Yana ama	48	1)	.,
Yana-ekecco	43	*2	*>
Yana-huana	43	13	.,
Yana-lomo	4.8	17	,.
Yana-suittu	48	**	••
Yurae-hualitea	48	**	,,
Ynrac-lomo	36	**	
Yurac-maina	48	,,	.,
Yurac-suittu	48	12	**
Yurac-ssunchehu	48	*1	**
from Bolivia			
Aja huiri (Ajanhuiri)	24	**	,,
Chiar imilla	48	,,	
Cjati	24, 36 1)	**	**
Janeko inunilla	43	**	12
Kaisalla	36	11	**
Monda	43	21	1,
Phitikalla	43	"	:1
Phureja	$24, 48^{2}$)	71	19
Philips	24	**	25
Surimana	36	39	19
two unnamed forms	24	11	
one unnamed form	48	"	٠,
from € kile			
Araucana blanca	4 ĉ	*11	,,
Caballera	48	,,	7.3
Cabra	48	,,,	19
Francesca blanca	48	,,	2.9
Gnapa	48	**	22
Gunpa chilena	48	"	12
"Huacha"	48	,,	12
Mahuihue	48	,,	- 9
Mantequilla	48	**	,,
"Mantequilla rosada"	48	17	3.2
Nalra	45	,,	22
Papa america	46	.,	11
" azul	48	12	,,
,, bolera	43	12	19

¹⁾ One form showed 36 and two forms showed 24 chromosomes.
2) One form showed 48 and seven forms showed 24 chromosomes.

SOLANACEAE (continued) n	211	
Solanum tuberosum L. native varieties		
from Chile (continued)		
Papa cabra	43	Rypan, 1950a.
" cauchao	45	N
., cebolla	40	0 0
" gпаря	43	o n
" Iline	46	A
" palmata	43	u
"pichuña	48	0.00
" pirihuana	4 c	
" rosada	43	pr 9
"temprana	48	0 0
" villaroela	43	PA 115
Rinones	48	33
"Siete semanas"	48	0.00
Villarroela	48 -	DF 107
so-called "wild potato"	48	V P
9 unnamed forms	48	28 13
Solanum hybrids:		
Solanum caldasii glabrescens ×		
S. chacoense		LONGLEY & CLARK, 1935.
Solanum demissum? (from		
Knappe — probably hybrid)	60	RYEIN, 1936a.
Solanum demissum × Majestic		
("Caliban" Knappe)	60	18
$Solanum \longrightarrow $ "Caliban" $ imes$ Mirdza	48	
Solanum edinense Berth. (=		
ctuberosum Sutton)	60	0.00
Solanum fendleri × S. cha-		
coense		LONGLEY & CLARK, Para.
Solanum Lycopersicum var.		
Dwarf Aristocrat F_1 (2n = 20)		
$24 \times 2n = 26$)		LESLIN & LESLIN, 1963.
+ 10-0 ²)		
Solanum tuberosum L. × S. utile		
KLOTZSCH (= demissum Lindl.		
var. Klotzschij Bitt.) from		
Vilmorin	48	Ryвіх, 1930.
Datura Stramonium L	24	LEVITSKY, 1936.
Nicetiana alata 9		Lawrence, 1930; Kostoff,
The second secon		1930d.
Mary Town State Mark Annual Angulary April Company of		17000.

Tregular distribution of the chromosomes was observed.
 In no case were 24 pairs of chromosomes seen at first metaphase and no first metaphase was seen with less than 7 quadrivalents. 12 quadrivalents were rarely observed.

SOLANACEAE (continued) Nicotiona (continued)	32	2r:			
	10		77	· C :	
Nivotiana attenuata	12		Kostoff, 193	Oa.	
" glavra	12		3.7	9	
., glutinosa	12				
	12	24	LEVINE, 1930		
" glutinosa terowu gali					
tissue)		24, 48,			
		96 1)	LEVINE, 1930		
" Langsdorfii	9		Kostoff, 19.	30 <i>d</i> .	
" Langsdorfii (scion on					
Solanum nigrum)		18 ²)	Kostoff, 193	30и.	
" Langsdorfii (scion on					
Solanum nigrum selfed)					
plants 1002, 1003, 913		18 ²)	Kostoff, 19	30 <i>a</i> .	
plant 1003		19 2)	,,		
plant 962		25 ²)	,,	,,	
plant 1604		21 2)	n	**	
plant 1905 (selfed)					
1003/22		17 2)	**	**	
1003/30	9	18	**	,,	
Nicotiana longiflora	10		Козтогг, 19	30d.	
Palmeri	12		21	,,	
, paniculata	12		**		
Rusbyř	12		1)		
. rustiva	24		11	,,	
Sanderaė	9		Lawrence, 1930d.	1930;	Kostoff,
suarcolens	16		Kostoff, 19	30d.	
and and a fact of	12		,,	**	
synvesiris	,	24 %	Webber, 19	30 <i>b</i> .	
. Tabacum	24	,	Kostoff, 19		
Takanan harbida 4.	241	24	CHRISTOFF,		
" I apateum (mapious)	2		,		
Tabacum (aberrant).	72		Kostoff, 19	30/	
Tabacum normal car-	10		120000000000000000000000000000000000000	00117	
**	24		CLAUSEN, R	1930	
mine	2-π			.,	
,,	24				
ral	24		22 33	,,	
,, Tabacum fluted car-	22 1 5				
mine	-		n n	"	

¹⁾ The majority of cells had 24 (the diploid number) of chromosomes.
2) Irregularities in inclosis were found.
3) Certain areas in root-tips showed 48 chromosomes.
4) One plant among 1470 was isolated because of a dwarf habit and was found to be a haploid plant.

5) The universal area area and a decirotated as R. The universal area area.

⁵⁾ The univalent chromosome is designated an F. chromosome.

SOLANACE Nicotiana (c	AE (continued)	n	2n		
	Tabacum fluted coral	23 + 1, 1		CLAUSEN,	k 1930.
2 1 1 D CO (C) MA	Tabacum normal car-	20 1 /		.,,	,
,,	mine-coral	24 + frag.			
	Tubacum fluted car-			**	, ,
,,	mine-coral	$23 + 1_1^{-1}$),			
		+ frag.		.,	*2 13
	Tabacum carmine-				
	coral variegated .	24 + frag.		.,,	21 17
,,	Tubacum sanguinea.	24		Kostoff,	1930d.
**	Tabacum wigand	24		*1	"
**	Tabacum var. pur-				
	purea	24		COODSPER	n, 1930a, b.
,,	Tabacum var. pur-				
	purea (X-rayed pro-				
	geny)				
one hap	loid plant	12		GOODSPEE	n, 1930a.
plants s	howing pistillody	24		13	77
plants s	howing chlorophyll				
	ency	22+13+11		**	9
plants s	howing				
pink	flowered variants	24, 24 +			
		frag.		21	17
	iploid plant			- 0	1930b.
other	progeny	-		11	**
		$23 + 1_{1}$		11	**
	abacum var. "Mary-				
	Mammoth (X-rayed				
	one tetraploid shoot	ca. 48		4.5	•
	Tubacum (progenies				
	es treated by X-ray				
and rad	ium)	. ,			
371		28 ²) units		GOODSPEE	o & Avery, 1930.
	Tabacum (progeny of	00.1.1			
x-rayec	l plants)			C	- (000
Viantia	Tabaanu (astan	$24+1_{1}^{3}$		GOODSPEE	0, 17506.
rwonana	Tabacum (scion on	24.45		f*	1030.
	Datura Wrightii	24 4)		Kostoff,	17004.

1) The modified univalent chromosome is designated F-co.

2) The number of units is the result of attachment, translocation, deletion, frag-

4) Irregularities in meiosis were found.

mentation and altered valency of the chromosomes.

3) At meiosis of first generation progenies from X-rayed plants, fragmentation, non-conjunction and conditions of unpaired and additions of fusions of chromosomes occurred. The result most frequently gave monosomics.

SQLANAC.	EAL (continued)	31	211		
Nicoliana t					
Nicolian	e Lubacum (seion of	1			
	Patura Wrightii)				
settest	plant Gorana	. 36 1)	72	Козтога	, 1930a.
plant i)	. 35-40 1)	59		13
plant (Tselbeli	. 24-27 1)		**	.,
		32, 34-36,		**	**
		38, 40-42		,,	11
Nicotion	a fomentosa	. 12		.,	19304.
Nicotiana l	hybrids: 2)				
Nicotian	a glanca × N. alata	- 21 ₁		**	,,,
	chanca × N. Langs	; -			
	dorfii			*1	**
	glanca × N. Iong	i-			
	jlora	$\frac{22_1}{2}$		**	**
	clauca F N. Rusby				
	elauca - N. Sando				,,
-3	, , , , , , , , , , , , , , , , , , , ,	2		,,	,,
11	glanca × N. Taba-				
	cum:	. 36 ₁ -(38) ₁		17	
,,,	glauca $> N$, tome	11			
	tonit	. 24 ₁		,,	31
I,	glutinosa / N. 2l	anca 24 ₁		17	**
,,	Langsdorfii $\times N$. a	lata 9		1,	.,
p	Langsdorfii Z I	V.			
	slauca	$\frac{21_1}{2}$		"	**
D	Lungsdorfii × i	ν.			
	Sanderae			**	**
"	paniculata × 1	N,			
	glauca	$\frac{24_1}{2}$,,	1.

¹⁾ Irregularities in meiosis were found.
2) Where a fractional number with denominator == 2 is used from Kostof F, 1930d the numerator used is the sum of the chromosomes in late heterotypic m etaphase. This plan was adopted since the valency of numbers in early heterotypic retaphase was not designated.

	iAE (continued)	11	211		
	ybrids (continued)				
Nicotiana	paniculata $ imes N$.				
	Langsdorfii	211		Kostoff,	19307.
,,	paniculata $\times N.rus$ -				
	tica	$\frac{361}{2}$		11	,,
,,	paniculata × N. Ta-				
"	bacum	361		.,	6
	Rusbyi × N. glauca .	12			
D	Rusbyi \times N. sylves-			7.	
,,	tris	$\frac{24_1}{2}$		"	22
		$\frac{24_{1}}{2}$	24	BRIEGER,	1930.
,,	Rusbvi × N. tomen-				
	tosa	12		Kostoff,	1930d.
		12	24	BRIEGER,	1930.
"	rustica \times N , alata .	331		Kostoff,	
12	rustica × N. attenu-				
"	ata	36 ₁		1.8	71
39	rustica × N. Langs-				
	dorții	33 ₁		71	**
23	rustica \times N. Palmeri	36 ₁		п	**
	rustica × N. panicu-				
,,	lata	36 ₁		t.i	•
**	rustica × N. Sande-				
,	rae	33 ₁		12	19
22	rustica × N. Taba-	4			
,,	cum	24			
,,	sylvestris × N. Rus-			1.3	11
	bvi	241			
T_{\perp}	0,11	2		,,,	3.9
r _h .	Tabacum × N. alata	331			
;io [,] n.	/\ A1 & triputett	2		27	"
ır.	Tabacum × N. glau-	ک			
" Tì. a.	ca			13	23
		2			

	AE (continued)	n	2n	
	brids (cóntinued) Tabacum × N. Rusbyi	36 ₁		Kostoff, 1930d.
		$12 + 12_{1}$	36	BRIEGER, 1930.
	tabacum (n. 72) $\times N$, rustica	various		Козтогг, 1930 <i>á</i> .
	Fabacum $\sim N$, sylvestris	property .	36	Brieger, 1930.
		2 36 ₁ 2		Kostoff, 1930d.
			6, 72 1)	Rybin, 1930b.
	$Tabacum > N. syl vestris F_2 \dots$		48	RYBIN, given by EGHIS, 1930.
11	$labacum \times N. syl-vestris (n426/16c)$.		60	Rybin, given by Eghis, 1930.
.18%	Tubacum \times N, syl- restris (n426/36c) .		43	RYBIN, given by EGHIS, 1930.
-1	Labucum sanguinea N. Sanderae	33 ₁		Костобб, 1930а.
"	Fabacum wigand × N. Sanderae	$\frac{33_1}{2}$		n n
и	Labacum var. purpura $(N, Tabacum > (N, Tabacum > N, sylvestris F_1 = 12)$ "scsquidi-			
	ploid hybrid"		i, 60	Webber, 1930a.
.3	"sesquidiploid hybrid" \times N. Tabacum	2-4+11-91		11 21
**	,sesquidiploid hy-			
	tris	13-73+11-	$-5 + \frac{12_1}{2}$	33 13

^{).} The hybrid with 2n=36 generally showed an extremely irregular meiosis while the tetraploid form with 2n=72 showed an almost regular meiosis. 23 to 36 units were seen at metaphase of the latter due to the presence of polyvalent chromosomes.

SOLANACI	EAE (continued)	EL	211		
Nicotiana b	ybrids (continued)				
Nicotiana	ı — "sesquidiploid hy-				
	brid" selfed proge-				
	nies	24-29 +	S ₁ -1 ₁	Wednes	., 1930a.
,,	$Tabavum \times N$, to-				
	mentosa	36 <u>1</u>		Kostor:	, 1930d.
		12 + 121	36	BRIEGER	, 1930.
(,,	Tabacum × N. Rus-				
())	byi) / N. sylvestris	24	4.5		**
	tomentosa × N. glau-				
	са	$\frac{24_{1}}{2}$		Kostoff	r, 1930d.
2)	tomentosa × N. Rus-				
	byi	12		,,	31
,,	tomentosa × N. syl-				
	vestris	24 ₁		11	**
		24 ₁	24	BRIEGER	, 1930.
	glauca × Petunia vi-				
	olacca	361 1)		Kostoři	, 1935d.
,,	rustica brasilia ×				
	Petunia violacea		43	•,	**
Ð	rustica humilis 2:				
	Petunia violacca		48	*1	,,
,,	rustica texana z Pe-				
	tunia violacea		43	**	**
(,,	rustica brasilia $ imes N$.				
	rustica texana) ×				
	Petunia violacea .		4.3	**	**
(,,	rustica humilis × N				
	rustica brasilia) ×				
	Petunia violacea		48	"	21
(,,	rustica texana × N.				
	rustica humilis) ×				
	Petunia violacea	48		1)	12

Triploid endosperm was developed when fertilization occurred but only diploid endosperm when the pollen tube induced parthenocarpic development of the endosperm.

COLVAINTE VE Imaine all		٥.					
SOLANACEAE (conitmued) Nicofiana hybrids (continued)	T2	2n					
Nicotiana Tabacum (2n = 72)							
S. Petunia violacea	40.15		ke.		0001		
	40 ¹)		Козто				_
Patunia violaeva (diploid race).	7					Riede, 193	Э.
	7	14	Kosto	,			
,, violacea (tetraploid race)						; Riede, 193	0.
	1-4	28	Kosto	FF,	1930 <i>c</i> .		
" violacea "Sutton's New							
Blue Bedding"		14	Matsu	DA,	1930.		
., violacea "Sutton's Levi-							
athan"		28	7,1		,,		
" violacea (scion on Sola-							
num nigrum)		14 2)	Kosto	FF, i	1930a.		
" $violacea$ (diploid $ imes$ te-							
traploid)	7-21		RIEDE	, 19	30.		
	units						
SCROPHULARIACEAE							
Werbaseum phoeniceum	16		LAWRI	ENCE	, 1930		
Linaria vulgaris	6		,,		.,		
Antirrkinum hispanicum	3		,,		"		
, $mulle$	8		,,		**		
Torenia asiatica L	8	16	Simon	& L	ewig,	1930.	
Baillenii	8	16	.,	1)	13	7.9	
,, edentula	9	13	31	,,	,,	21	
. Fournieri (type-violet)	9	18		**	,,	.,	
" Fournieri var. alba	9	18	,,	,,	1)	17	
, Fonraieri var. alba							
mut, compacia	9	19	.,	19	12	19	
, Foarnieri var. alba							
mut. gracilis	9			1)	11	,,	
Fournieri (type-violet)			"				
× T. Fournieri var.							
alba mut. compacia .	9	1.3	27	13	,,	**	
Aiectorolophus hirsutus	7	14			1930.	,,	
Lathraeu squamaria L	16			,	, 1930).	
PLANTAGINALES			2.00		.,		
PLANTAGINAGEAG							
Plantago lanceolata L	12		VARA	. ITM	A, 1930). ·	
. 7	12			,	,	••	
" major L	شن			7.3	2.9		

³) Gametes with various chromosome numbers were found. Occasionally those with 3, 4 and 6 and with 80 (dyads) or 160 (nomads) chromosomes were found.
⁹) Irregularities in meiosis were found.

		2-				
RUBIALES	11	2n				
CAPRIFOLIACEAE						
Sambucus 1)						
Section Eusambucus	4.0				Learns	1030
Sambueus canadensis	18		SAS	e);	Kribs,	1950.
" nigra	15		7.9	**	2.9	31
Section Botryosambucus						
Sambucus racemosa	18	36		13	**	**
Viburnum 1)						
Section Lantana						
Viburnum Lantana	9		> 2	1)	11	11
Section Pseudotinus						
Viburnum alnifolium	9		,,	,,	22	19
Section Pseudopulus						
Viburnum tomentosum	9		1.9	2,3	**	• •
Section Leutago						
Viburnum Lentago	9		12	19	1)	**
" prunifolium	9		7.1	23	,,	11
Section Odontotinus						
Viburnum acerifolium	9		,,,	33	7.6	v
" hupchense	9		21	.,	11	11
" lobophyllum	9		+3	17	> r	1.9
Section Opulus						
Viburnum opulus	9	18		4.4		11
Sargenti	9		1)	٠,	1.9	
n trilobum	9		,,	21		4.5
Symphoricarpus orbiculatus		18	11	11	12	7.1
Abelia Engleriana	16		,,	17	1,5	* 5
Schumannii		ca, 32	,,	.,		
Kolkwitzia amabilis	16	32				
LONICERA 1)						
Subgenus I. Chamaeceras u	s					
Section Isoxylosteum						
Lonicera Thibetica	9-18					
Section I s i k a			1,			
Lonicera Altmannii	9				.,	
	9-18		"			
" a: :: 7:	9		,,	19	.,,	
,,	9		**			,,
, , , , , , , , , , , , , , , , , , , ,	18		1)	3.3		*1
	9		33	,,		**
,, ,,	18		3.4	,,		**
" tenuípes	10		"	12	"	11
Section Coeloxylosteum	9	18				
Lonicera chrysantha	7	10	,,	13	,,	*1

¹⁾ Classification is according to Rehder (1927).

CAPRIFOLIACEAE (continued)	13.	2n			
LUNICERA (continued)					
Section Cocloxylosteum					
(continued)					
Lonicera demissa	9		Sax & K	RIBS,	1930.
., Korolkowii	9		22 12	23	2.5
· Muackii	9		,, ,,	13	.,,
prostrata	9		13 13	12	1)
" quinquelocularis	9		27 22	,,	*2
tatarica	9		21 12	13	>3
Section Nintooa.					
Lonivera alsanosmoid es	18		22 24	**	,,
Henryi	27	54	72 23	,,	,,
japonica	9		22 21	**	,,
Subgenus II. Perichymenum	1				
Lonicera dioica	9		** **	,,	1)
prolijera	Ģ		,, 1,	,,	1)
Diervilla 1)					
Section Weigela					
Diervilla florida	18		37 37	1)	
hortensis	18	36	71 19	,,	11
praccox	13		22 22	,,	
Section Eudiervilla					
Diervilla rivularis	18		11 71	11	**
sessilifolia	13		21 12	11	,,
artarm prin 4 / Do					
CUCURBITALES					
CUCURBITACEAE		21	31-77	1020	
Metothria punctata		24	McKAY,		
Sicyos angulata		24 22	11	33	
Momordica charantia			**	11	
Echallium claterium		24	21	n	
Luffa acutangula		26	1)	1)	
cylindrica var. Lufja			10.		2.0
gowrd	11		Passmo	,	
Marylandica		26	McKay	•	
Bryonia dioica	10		LINDSA	1	
Citrullus vulgaris	11		McKay	, 1930.	
,, vulgaris var. Kleckley					
Swects watermelon .	11	22	Passmo		
, vulgaris vav. Radio .	11	22	WHITAK	ER, 19	30.
vulgaris var. Tom					
Walson	11	22	"		,,
Cucumis anguria L. (?)		24	Kozhuk	HOW,	1930.

¹⁾ Classification is according to Rehder (1927).

CUCURBITACEAE (continued)	n	2n	
Cucumis (continued)			
Cucumis augurica var. West In-		22	Whitaker, 1930.
dia Gherkin	11	24	Колникном, 1930.
" dipsaceus Ehrend		24	Mc Kay, 1930.
" dipsaccus			'
" erinaceus (?)		24	Когникиоw, 1950.
", $tlexuosus(?)$		24	u D
" grossularia		24	n
" lyratus Zim		24	
" melo	12		McKay, 1930.
" melo var. chinensis Pang.		24	Кохникном, 1930.
,, melo var. flexnosus			
NAUD. 1)		24	12
" melo var. Lake Champ-			
lain	12	24	Whetaker, 1930.
, melo var. microcarpus			
Pang. 1)		24	Кохичкном, 1930.
" melo var. Rocky Ford			
cantaloupe	12		Passmore, 1930.
melo var. vulgaris agres-			
tis Naud. 1)		24	Koznoknow, 1930.
" melo var. vulguris cultus			
Pang. 1)		24	19
matubilizano D. Meyro		24	P P
		24	McKay, 1930.
anniaganhas Nara		24	Количкиом, 1950.
and an in our about		24	McKAY, 1930.
advirationing of 2		24	Koznuknow, 1930.
hus his standard T		24	LESS MAN TO THE STATE OF THE ST
antinum I		14	0 0
nationary Fourthauina	7		Whitaker, 1930.
antimore than the damen	7		,
, sativus var. Frenterson.	1		0 9
,,	7	14	
Gherkin	I	1 12	11
sativus var. usambaren-		0.4	7.5
ses Zim.		24	Кохинкном, 1930.
" sativus var. White Spine			
Cucumber			Passmore, 1930.
Bryonopsis laciniosa		24	McKay, 1930.
Benincasa hispida		24	ri n

Several forms of this variety were examined.
 Root-tip cells showed 14 chromosomes. Certain cells in the periblem showed
 The chromosome count could not be ascertained definitely in the pollen mothercells.

644 102 (102 102 1 C 12 1 C) Kinned 1					•
CUCE RBITACEAE (continued)	11.	2n	71 11 1101		
Layenaria vulgaris		24	McKay, 1930.		
Pipe	11	22	Whitaker, 1930	·_	
Cheurbita ficifolia		42	McKay, 1930.		
poetidissima		42	"		
" maxima Duchesne					
(Hubbard Squash) .	20	40	Castetter, 1930).	
, maxima var. Mam-					
moth Chili		40	WHITAKER, 1930	٠.	
maxima var. Warted					
Mubbard Squash	20		Passmore, 1930.		
moschala Duchesne					
(line \$ 5) var. Large					
Cheese	24	48	Castetter, 1930).	
, moschata vær, Cal-					
<i>конп.</i>		48	WHITAKER, 1930).	
palmata		42	McKay, 1930.		
" popo var. English ve-					
getable marrow	20		Passmore, 1930		
" pepu var. Jersey Whi-					
te Bush Squash	20		37 27		
pepo vor. Winter Lu-					
NHPY	20	40	Whitaker, 193).	
., pepo L. (Connecticut					
Field line#175)	20	40	Castetter, 193	0.	
Coccinia hirtella		24	McKay, 1930.		
Cyclanthera pedata		32	**		
CAMPANULATAE					
CAMPANULAGEAE					
Campanula persicifolia	8		Gairdner & Da	RLINGT	on,
,					1930.
persicifolia (white					
double variety) .	8 1)		15 75	13	**
persicifulia (form					
from Gmunden,					
Austria)	8 1)	16	19 28	17	>>
., persicitolia (Murols)		16	0 27	,,	,,
" persicifolia (white					
double variety × seedling					
from Murols, Prey de Pome)	8 2)	,,	13 23	,,	13

This type had 6 rings of 2, and one group of 4 chromosomes instead of the 8 bivalents at metaphase.
 Of 4 plants of this cross, 1 had 8 bivalents and 3 had 6 bivalents and the ring of 4 chromosomes.

COMPOSITAE	10	20.				
CREPTS						
Crepis aculculu (D.C.) Boiss.	,	3	HOLLINGSHE	AU & B		
						1930.
" alpina I		10		7.		ii
" alpina vas. syriaca						
BORNM	•	10, 11,				
		12, 13	12		++	14
" amplexitolia (GODR.)						
WILLK		8	64	1.0	*1	.,
" aspera L		ક	**	.,	*1	
" asturica Lacaita		10	0			
" aurea (L.) Cass		10	10	*	3.1	
, aurea		10	AVERY, 1930			
" biennis L		39, 41	HOLLINGSHE	ATO St B.		
						1930.
blattaroides (L.) VILL.		3	e			13
, bulbosa (L.) TAUSCH.		18				1.
, bungci Ledeb		8, 15	• 1		4.1	*,
" burejensis F. Schmidt		8	14			**
burenjana Botss		3		.,	, .	
bursifolia L		8	**	*1	11	
, capillaris (L.) WALLE.		6				.,
" capillaris		å.	AVERY, 1930			
	3,2+21					
	3,2+2 ₁ 2					
	1+41	ta .	HOLLINGSHE	AD, 193	Or, 5.	
	2					
" capillaris (haploid) 1.	3 4;	*** -1 Ay-	Houristant	A16, 10,8	90.jr.	
	2					
. chondrilloides JACQ		ð	Hollinoshi	An & B	AHCOC	K,
,						1930.
, chrysantha Froel		9			* *	
" ciliata C. Kocn		40, 42(?)		11		
" conyraefolia (Govan) D		3	,,	**	150	
" dioscoridis L		5	.,		10	41
" joetida L		10	,,	**		
" gymnopus Koidz		8	.,	12		
Look di Tancov		16	,,	.,	-	
" RUCKUH LANGE			· ·			

¹⁾ Five haploid Crepis capillaris plants were found among C. capillaris & C. betw-7) Five haploid crepts tapmarts plants were found among the departs of the row F₁ hybrids and one came from a C. capillaris × C. setosa cross. Parts of some root-tips in each haploid plant were diploid.

2) Meiosis was very irregular, univalents segregating at random or rarely dividing and the daughter halves going to different poles.

COMPOS	iTAE (continued)	11.	2n				
CREPTS (C	ontinued)						
Crepis	hierosolymilana Borss		12	HOLLINGSHEAD	& BA	BCDC:	.28
							1930.
.,	hookeriana Bara		8	P	13	,,	11
.,	incuna Sibth, et Sm		16	**	12	31	12
12	incarnala Tauscu		8	**	12	,,	12
0	iaponica (L.) Bentu		16	97	,,,		,,
D	lacera Tenore		8	,,,	,, .	,,	21
11	kontodontoides Av		10	**	7)	37	*7
11	leantodontoides		10	Avery, 1930.			
	tybica l'amp		8	HOLLINGSHEAD	& B	ABCOC	к,
							1930.
- 11	lyrala Front		12	21	,,	,,	**
.,	marschalli C. A. Mey		8	31	,,		,,
	marschalli		8	AVERY, 1930.			
	mollis (Jacq.) Ascu		12	Hollingshead	ο & В.	ABCOC	к,
							1930.
	miniana URV		12	"	,,	**	,,
	multicaulis Ledeb		10	"	**	.,,	,,
.,	myriocchhala Coss. et						
,,	D. R		8	**	٠,	,,	
	uanā Richards		14	**	.,	,,	,,
	neglecta I ,		8	>,	,,	11	
,,	nicaensis Balb		3		",	12	.,
11	palaestina (Boiss.)						
17	BORNM		8	,,	11		**
	paludosa (L.) Moencu.		12	13	,,	1)	.,
	pannonica (Jacq.) C.						
,,	Kocii.		8	21	,,,	.,	*1
12	parviilora Desr		8	,,	1)	1)	**
11	parciflora		8	AVERY, 1930.			
,,	polytricha Turcz		16(?)	Вавсоск & N	AVASI	HN, 19	930.
,,	bontana (L.) D. T		10	HOLLINGSHEA	р & В	ABCO	cĸ,
,,							1930.
	praemorsa (L.) Tausch.		8	"	,,	,,,	,,
**	putchra (L.)		8	31	,,,	,,	,,
.,	reuteriana Botss		8	12	,,	,,	2.5
10	rubra L		10	37	*>	,,	**
*1	senecioides DELICE		8	,,	,,	,,	11
*1 ,	setosa Hall. f		8	**	21	,,	,,
14	sibirica L		10	,,	.,	**	,,
	taraxaciiolia Thuile.		8	n	**	12	12
	tectorum L		8		,,	,,	,,
"	tectorum		8	AVERY, 1930.			
*1							

	OSITAE (continued)	Tì	2n				
	(American species):			76	1.00	20	
Grep	is lectorum	40	3	Hollingsunar	25 176	0.46.	
12	teciorum "chimera" (tri-						
	ploid progeny) 1)		8,9	NAVASHIN, 198			
11	tectorum seedling		74,84 4				
"	tenuifolia Willia,		1.7	Hollineshira) % B	ABCO	
							1930.
**	tingitana Salz		10	1)	37	13	**
,,	tingitana		10	Aveny, 1950.			
.,	vesicaria L		3	HOLLINGSHEAT	2 % B	ABCO	ıĸ,
							1930.
33	acuminata Nutt		33, 44,				
			55(?)	**	12	,,,	11
,,	andersoni Gray		22	13	,,	10	
	barbigera Leib		44, 88(?)	12	13	>1	31
,,,	elegans Hook		14	21	.,	1,1	
	glauca (NUTT.) T. and G.		22	*1	13	,,,	21
,,	gracilis (EAT.) RYDE		22, 55(?)	**	11	21	13
,,	monticola COVILLE		55(?)	19	.,		19
,,	nana		14	.,	15	1)	**
,,	occidentalis NUTT		22, 44	*1		11	
.,	runcinata ([AMES] T.						
13	and G		22		.,		
	scopulorum Cov		44(2)		7.1		
	hybrids:			"			
	is cupillaris × C, lconto-						
Grop	dontoides	5 ³)	5	AVERY, 1930.			
	nomento	2		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	capillaris × C, tectorum	4-					
**	'	±1, 2±	31. 7	Hollingsheat	1 1 6	2.75.a	
	$F_1 \dots \dots 3$	11,44	51,	2 2 1 1 2 2 2 3 1 1 1 1 1 2 2 2 2 2 2 2		Aller a	
		1 : 5. 7.	4				
		$\frac{1+5_1,7_1}{2}$					
11	capillaris × C. tectorum						
.,	F_1 (triploid hybrids)	3+41 4)	10	2,8		,,	
**	capillaris × C. tectorum	۵.					

¹⁾ This plant consisted of three shoots, two of which were triple B trisomic (2n = 9)

and the third was normal diploid (2n = 8).

2) This plant showed varying numbers of chromosomes in different cells of the root-tip and along with the normal chromosomes were from 1 to 4 atypical chromatin rings or discs.

³⁾ Only rarely was there any association of chromosomes as pairs.
4) Rarely 2 bivalents and 6 univalents were found and rarely a trivalent, 2 bivalents and 3 univalents.

71	2n					
		Housecar	in 103	0~		
1 1		HOLLINGSHE	AD, 170	Uit.		
	14					
2 2		",	,			
2 2						
5, 4 + 21	10	Avery, 1930.				
y						
	9					
ž ,						
	9	,,				
2						
9 2)	9	22 23				
2						
	10	HOLLINGSHE.	AD & BA	BCOC	cĸ,	
					1930.	
	16	**	17	>2	12	
	10	,.	***	,,	1.5	
		LAWRENCE, I	930.			
		13	2.5			
		**	,,			
		SHIMOTOMAI,	1930c.			
	18	**	3,			
	24	Demonson 1	330			
. 10		Kodolico, I	7 . 0U.			
	7, 8, 9, 10, 11 7, $6+2$, $\frac{1}{2}$, 1	7, 8, 9, 10, 11 7, $6+2$, 14 $\frac{2}{2}$ $+\frac{4}{1}$ $+\frac{4}{2}$ $\frac{4}{2}$ $\frac{4}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{9}{2}$ $\frac{10}{16}$ $\frac{16}{32}$ $\frac{16}{32}$ $\frac{36}{18}$ $\frac{18}{27}$ $\frac{5}{4}$	7, 8, 9, 10, 11 HOLLINGSHE 7, 6+2\{\bar{2}\}, 14	7, 8, 9, 10, 11 HOLLINGSHEAD, 193 7, 6+2\(\frac{1}{2}\), 14 ,, \(\frac{2}{2}\) +\frac{4_1}{2}, 4+6_1}{\(\frac{2}{2}\)} 5, 4+2_1 10 AVERY, 1930. 7-\(\frac{9^1}{2}\) 9 ,, \(\frac{2}{2}\) 9 \(\frac{1}{2}\) 9 ,, \(\frac{2}{2}\) 9 \(\frac{1}{2}\) 9 ,, \(\frac{1}{2}\) 10 HOLLINGSHEAD & BA 16 ,,,,,, \(\frac{1}{2}\) 16 LAWRENCE, 1930. 16 \(\frac{3}{2}\) 36 SHIMOTOMAI, 1930c. 18 ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7, 8, 9, 10, 11 Hollingshead, 1930a. 7, 6+2\{\frac{1}{2}}, 14	7, 8, 9, 10, 11 HOLLINGSHEAD, 1930a. 7, 6+21, 14 , 2 +41, 4+61/2

MONOCOTYLEDONEAE

GRAMINEAE		
Section Maydeae		
Zea Mays	1	O BEADLE, 1930; BURNHAM, 1930.
; :semi-sterile)	3+14	Burnham, 1930.
	2	

 $^{^{\}circ})$ Most frequently there was no pairing of chromosomes but the complete range of associations from 9 univalents to 4 bivalents plus one univalent was found. $^{\circ})$ All degrees of association from 1 + 7_D to 4 + 1₁ were found.

GRAMINEAE (continued)	11	2n			
Section Maydeae (continued)					
Zea Mays $(75 + \frac{m}{70} \text{ sterile})$	5+21 2		BURSH	AM.	1530.
" (2 plants of interme-					
diate sterifity)	8+1 _E		(1)		
" " (asynaptic plants) .	34		BEADL	, 17	ωű.
., " (asynaptic × normal)					
progenies		20-35	4.4		
Section Andropogoneae					
Andropogon halepensis	10		KATTE	RMA	sov. 1980
" halepensis Brot	20	40	Nakaj:	MA,	1930.
" sorghum Brot, var.					
cernuus Koern.	10	20	1)		12
" sorghum Brot, var.					
sudanensis Piper	10	20			i.i.
" sorghum Brot, var.					
vulgaris HACK	1.0	20			11
Succharum Fijian Native					
Cane	50-60		BREME	e, 15	/30).
Saccharum — Fiji Rarawai	50-60				F-1
Section Paniceae					
Setaria italica BEAUV		18	NAKAH	MA,	1950.
Section Orvzene					
Oryza sativa (Japonica type)					
var. Nakate-Shinriki	12	24	KATO,	5., 1	930.
"Okute-Shinriki	1.3	24	21	,.	,,
" Salpei	12	24	11	,,	
scented rice	12	24			191
Oryza saliva (Indica type)					
var, Fung-hsueh-nuo	12	24		,,	
Hunan-sièn	1.2	24			
" Tan-ko-fo-ira	12	24			**
Oryza sativa (F, hybrids be-					
tween different types) 1)					
Aikoku × Tsao-sien-tao	12	24			,,
Fung-hsuch-nuo × Nakate					
Shinriki	12	24	*,		24
Hinode × Basmati	12	24	,,	77	25
				.,	

¹⁾ In these hybrids, there were a great many abnormalities in the development of the pollen after tetrad formation but "the number and shape of the chromosomes was almost the same as in the hybrids within the same type".

GRAMINEAE (continued)	n	2n					
Section Oryzeac (continued)							
Hinode Fung-tsui-yu-							
keng-tao	12	24	Kato, S	., 1930	٥.		
Hinode & Hatadayi	12	24	,, ,,	,,			
Hinomoto E Huo-pe-keng-							
tao	12	24	.,, .,,	,,			
Hinomoto & Pu-chiang-							
sang-pe-li-ken-tao	12	24	,, ,,	.,			
Hunan-sien / Nakate Shin-							
riki	12	24		, ,,			
Kamevi × Black Scenaddy	12	24	,, ,,				
Sei-vu z Fung-hsüeh-nuo .	12	24		.,			
Orysa sativa (F, hybrids within							
the same types) 1)	12	24		***			
Orveg sating L. var. Kochivittu			**				
(from India)	12		SELIM, 1	930.			
, sativa L. var. Nabatat 1							
(from Egypt) probably							
introduced from Persia.	12		,,				
sativa L. var. New Japa-			,,				
nese 5 (from Egypt) .		1					
learlier from Japan un-							
der name Ashigara Shin-							
giki)	12		.,				
satina L. var. Temas			•,				
(from lava)	12		13	,,			
sativa L. (an unnamed							
race of Regents Park							
from Egypt)	12		**	n			
Section Phalacideae							
Phalaris urundinacea L		28	NAKAJI	ŭA, 19	30.		
canaricusis	6 2)		KATTER	MANN	, 1930.		
Section Agrosteae							
Subtribe Plainae							
Alopecurus julcus	7		21		,,		
geniculatus	14		*1		11		
myosuroides	7		,,,		,,		
" pratensis	14		1,		"		
Phicum alpinum (Sweden)		14	GREGOR	& SA	NSOME	, 1930.	
" alpinum (Scotland)		28	,,	,,	,,	,,	

¹⁾ In these hybrids, conditions of chromosome number shape and behavior were essentially the same as in the varieties.
2) One pair of chromosomes always remained attached end-to-end on the equatorial-

plate.

GRAMINEAE (continued)	n	25				
Section Agrostehe (continued						
Phleum Michelii	7 4)		KATTE	RMAND	k, 1930.	
" pratense	21				1)	
pratense (Group 1)		42	GREGO			, 1930.
" pratense (Group 2)		14	11	.,		
pratense (2n == 14) ×						
Phleum alpinum (2n						
= 28) F ₁		21	**	D.	,,	11
" pratense (2n = 14) ×						
Phleum alpinum (2n						
= 28) F ₂		42	,,	,.	11	17
, alpinum (2n = 28) ×						
[Phleum pratense (2n						
= 14) Phleum alpi-						
$num (2n = 28) F_{i}$].		26, 27,	30 ,	,,	.0	,,
" pratense (2n = 42) ×						
Phleum alpinum (2n						
= 28)		35	ъ	1)	1)	*)
Section Aveneae						
Avena abyssinica Hochst		29	Nikola	EWA,	given l	by Ivanov,
			1930			
, abyssinica Hocust. var.						
glaberrima Chiovende	14	25	Еммь,	19308		
, barbata Pott. var. ty-						
pica Malz	14	28		1.5		
" Brauni Körn,		28	Nikola	alwa,	given l	by Ivanov,
			1930.			
" brevis Roan,		[4]	Еммі,	19306		
" Bruhnsiana Grunek .		14	,,	1930a	, b.	
" clauda Duk		14	,,	1930a		
" fatua L	21	42	19	1930.6		
" jatua L. ssp. jatua L.						
THELL		42	Емме,	1930a		
" jutua L. ssp. sativa L.						
THELL		42		11		
" jatua L. ssp. sativa prol.						
chinensis (Fisch.)		42	**	13		
" flavescens L	14	28	Nakaj	ima, l	930.	
" Hildebrandti Körn		28	NIKOL.	VΕWA,	given	by Ivanov,
			1930			
" kirtula LAG		14	Емми,	1930 <i>b</i>		
" Ludoviciana Dur	21	42		11		
Annual Principles (Control of Control of Con						

 $^{^{\}rm 1})$ The 7 chromosome pairs were found as 7 rings or as 5 rings \pm 2 chromosomes attached end-to-end.

CRANII	NEAE (continued)	n	2n			
	Aveneac (continued)	41,	24			
	nudibrevis VAV		14	EMME,	10304	
	sativa L	21	42	,		
17		21	23			. 1 Y
**	Schimperi Körex		40	1930.		m by Ivanov,
17	staritis L	21	42	Емме,	1930b.	
**	sterilis 1 ssp. byzantina					
	(C. Kocn)		42	Емме,	19306.	
31	sterilis 1., ssp. Ludovi-					
**	ciana (Dur.) Giller et					
	MAGNE		42	1,	12	
*2	sterilis L. ssp. macrocar-			•,		
* * * * * * * * * * * * * * * * * * * *	ра (Mönch.) Brig		42		1930a.	
	strigosa Schreb. ssp.			"	.,	
1)	abyssinica (Hocust.)					
	THELL		28			
			20	1)	**	
33	strigosa Schreb. SSp.		28			
	barbata (POTT.) THELL.		25	,,	"	
1.3	strigosa Schreb. ssp. bar-					
	bata subvar, atheranta.		28	1)	**	
2.0	strigosa Schreb. ssp.					
	barbata subvar, genuina		28	**	n	
**	strigosa Schreb. ssp.					
	barbata subvac, trijlora		28	***	+3	
,,,	strigosa Schreb, ssp.					
	hirtula (LAG.)		14	11		
13	strigosa Schreb. ssp.					
	strigosa (Schreb.)					
	THELL		14	1)	.,	
13	strigosa Schreb. 35p.					
,,	strigosa prol. brevis					
	(ROTH.) THELL		14	**	,,	
	strigosa Schreb. ssp.					
- 27	strigosa prol. nuda (L.)					
	Hausskn. = maibrevis					
	VAV		14	,,	1)	
	strigosa Schreb. SSp.		• • •	,,	"	
1)			28			
	Vaviloviana MALZ		20	**	•,	
,,	strigosa Schreb. ssp.					
	Vaviloviana Malz. var.					
	intercedens Thell. (=		30			
	A. Wiestil Thellung)		28	,,	**	
***	strigosa Schreb. ssp.					
	Vaviloviana Malz. var.					

GRAMINEAE (continued)	11	211	
Section Avenene (continued)			
pilosiuscula Thell. (+-			
A. Wiestii Thellungi		25	Емма, 1930а.
Avena strigosa Schreb. ssp. l'a-			
viloviana Malz. var.			
pseudoabyssinica (= A.			
Wiestii Thellung).		28	p
		2	,, ,,
" strigosa Schreb. ssp.			
Wiestie prol. Vavilov-			
ianu Malz. var. pseu-		20	
doabyssinica THELL	14	28	21 21
" strigosa Schree, ssp.			
Wiestii prol. Favilov-			
iana Malz. var. inter-			
cedens Thell	14	28	25
" ventricosa Balansa		1-4	" 1930a.
Wiestii Steud. (accord-			
ing to Vavilov)		14	<i>y</i>
Wiestii (STEUDEL) THELL.			
var. intercedens Thell.		25	THELLUNG, given by EMME, 1930b.
Wiestii (STEUDEL)			
THELL. Var. pseudo-			
abyssinica Theld		28	THELLUNG, given by EMME,
novssinica incim.			19306.
PAPPOPHOREAE			
Sesteria coeralea var. uliginosa.	14		Kattlemann, 1930.
	1.3		Astronous Contract
Section FESTUCEAE			
Subtribe Melicinae			Kathemann, 1930.
Melica altissima	9		NATHIEMANN, 1700.
, nutans	à		14
Subtribe Poinae			
Dactylis Aschersoniana	7		11 22
" Aschersoniana Graebn. 1)		14	Levas, 1930.
" glomerata L. 2)		28	81
" glomerata	14 2)		Kattermann, 1930.
" Aschersoniana Graebn.			
imes D. glomerata L. 4) .		21	Levan, 1930.

¹⁾ Seven forms were investigated. Svalöf nos. 943; 973; 1194; 027 Plant 1; 026. Plant 4; 039 Plant 16; and one from Dr. Turesson at Akarp.

²⁾ Five forms were investigated; Turesson Akarp nos. 104 and 155; Weibullsholm and 5057; and one wild growing form.
In one plant 15 chromosomes were found at each pole of the cells during anaphase.
The hybrid was Svalöf no. 028 Plant 30.

GRAMINEAE (continued)	11	211		
FESTUCEAE (continued)				
Subtribe Poinge (continued)				
Pou annua	14		Katterm	ann, 1930.
, eursia	20+511)		- 19	1)
	2			
Subtribe Festucinae				
Festica arenaria L	21	42	NAKAJIM.	a, 1930.
., duriuscula L		42	,,	17
, ovina vav. curvula				
Wahlenberg (from				
Vickleby)	7	1-4	Turesson	v, 1930.
, ovina var. vulgaris				
(from Ottenby)	7		13	12
ovina thigh alpine form				
from Finse)	7		**	t ₂
ovina aapm, rogalan-				
dica		21	.,	1)
wina aapm. svolvae-				
riensis		28	11	9
ovina aapm. tennforsien-				
sis		42	,,,	
pratensis	7		KATTERN	MANN, 1930.
praisests Gray	7	14	Nakajim	a, 1930.
, !enuifolia Hort	7	14		,,
Briza media	7		KATTERN	eann, 1930.
Subtribe Brominae				
Bromus erectus var. enerectus .	28		Katteri	MANN, 1930.
Section Hordene				
Agropyron caninum (I) R. &				
S. 2)		28	Рето, 19	930.
, cristatum J. Gaertn	. ³) 14	28		,
		ì÷	**	11
		29	,,	**
, eaghar Grossn. 4) .		14	23	73
. descriorum 4)		28	19	**

 $^{^{-4}}$) This plant was thought to be a hybrid because of the lagging chromosomes on the spindle.

²) This species was introduced from Denmark.

introductions from Caucase, Georgie, Univ. of California, Montana Agr. Exp. Sta. and those of Univ. of Alberta showed root-tips with 28 chromosomes.

Introductions from Omsk Exp. Sta., Siberia had 14 chromosomes.

Of introductions from Krasnyi Kut Exp. Sta., U. S. S. R. three strains had 14 and one had 28 chromosomes.

One strain from Dom. Range Exp. Sta. at Manyberries had 29 chromosomes.

⁴⁾ This species was introduced from Russia.

GRAMINEA	£ (continued)	11	211		
Section Ho	edecae (continued)				
Agropyron (c	ontinued)				
	dasystachyum				
3 17	(Hook.) Scrien. 1)	1.1	23	Peto,	1936.
,,,	clongatum 2)		70	.,	**
	glaucum R. & S. 3).		42	11	.,
,,	griffithsii Scribn.				
	& SMITH 1)	14	23	17	
1)	junceum (L.) Beauv. 3)		28	33	. *
,,	obtusiusculum Lan-				
	GE 3)		42	31	**
,,	pugens (Pers.) R. &				
	S. 4)	21		12	11
19	repens (L.) BEAUV. 5)	21	42	22	11
			35, 34-35	31	3.1
			42	11	**
22	repens (L.) var.				
	glaucescens Engl. 2)		42	**	11
"	richardsonii				
	Schrad. 1)	14	28	- 11	13
"	sibiricum (W.)				
	Ercиw. 2)		28		17
,,	sibiricum var. deser-				
	torum ")		28		**
19	smithii Rydb. 6)		56	ч	+1
*1	smithii molle (S. &				
	S.) Jones 7)		28	17	0
			56	13	**
,,	spicatum (Pursн)				
	SCRIBN. & SMITH 3)	7	1.4	17	

¹) This species was introduced from western Canada.

²⁾ This species was introduced from Russia.

²⁾ This species was introduced from Denmark.

⁴⁾ This species was collected in England.

⁵⁾ Nine forms from Western Canada had 42 somatic chromosomes and 21 bivaients. Of five plants obtained from Russia, three gave counts of 42 somatic chromosomes, one counts of 35 and another either 34 or 35 chromosomes. A strain from Copenhagen had 42 somatic chromosomes.

⁶⁾ Ten strains from Western Canada showed 56 somatic chromosomes.

 $^{^{7)}\,}$ Of four plants from Western Canada studied, two had 28 and two had 56 somatic chromosomes.

 $^{^8)}$ Of five plants from Western Canada that were examined two had 14 somatic chromosomes whereas in the three other plants a high percentage of cells showed 1—3 extra chromosomes.

GRAMINEAE (continued)	11	2n			
Section Hordeeae (continued)					
Agrapyran (continued)					
Agropyion tenerum Vasev 1) .	14	28	12 17		
tenerum Vasiy (one					
plant) 2-	4 + 13	-171 21	Рето, 1930.		
		2			
villosum Line, 2) .	7		21 71		
,, richardsonii \times A.					
tenerum	14		33		
Subtribe Hordeinae					
Brachypodium pinnatum		14 3)	KATTERMANN,	1930.	
Subtribe Loliinae					
Lohum perenne 1)	7		KATTERMANN,	1930;	
			1	Vakajima,	1930.
Secule cereule	7		Sax, K., 1930c	; Bleier, 1	1930a.
" cereate vac. Abruzzes	7		LONGLEY & S	ando, 193	30.
cereale L. var. afghani-					
cum		14 & 16	LEVITSKY, 193	0.	
vereale (Rosen) 5-	-7 ⁵) +-4	1-0 14	Aase, 1930.		
		2			
cereale var. Abruzses >					
S. montanum 7,	, 6+2 ₁		Longley & S	ando, 193	30.
	2				
Alchors"					
Section Polyeides (ZHUK.) SE					
Acgileps huncialis Vis	14		SENJANINOVA-	KORCZAGII	
					1930.
columnaris Zhuk	14		**	"	" .
orata l	14		"		11.1
			Percival, I		
	14		LONGLEY & S.	(NDO, 1930).
orată			Aase, 1930.		
	1-1	28	•	1000	
., orata	14 14 21	20	Longley & S. Bleier, 1930a).

riable forms, all but one showed 28 somatic chromosomes and in seven of them the 14 bivalents were seen at heterotypic metaphase. In one plant 21 somatic chromosomes and in meiotic figures 13 to 17 univalent chromosomes were found.

") This species was introduced from Denmark.

4) The plant material studied showed such "monstrosities" as unusual branching. KATTERMANN (1930).

Bibliographia Genetica X

The chromosomes were associated as 14 bivalents or 12 bivalents + 1 quadrivalent or 12 bivalents + 1 trivalent + 1 univalent but at the poles of the spindle 14 chromosomes were always counted.

⁽⁴⁾ There was some trace of trivalents.
(5) Classification of species used by Senjaninova-Korczagina was determined by ZHUKOVSKY.

GRAMINEAE (continued)	11	211			
AEGILOPS (continued)					
Avgilaps triaristata ssp. contorta					
Zwuk	21		SESJANINONA.	Kurczagh	4A., 1930.
" triaristata ssp. recla					
ZHUR	1-1		17	11	14
triuncialis	14		LOYGLEY & SANDO, 1930.		
" triuncialis 1		14	Percival, 1930.		
			SENJANINOVA-		
					930.
, triuncialis ssp. Kot-					
SCHYI BOISS	1-4		19	21	7.4
iurcomanica Roshev	21		13	3+	**
umbellulata Zhuk	14		14	1.0	
variabilis Eig	14		84	- 10	1.5
Section Cylindropyrum					
(JAUB. et Sp.) SENJAN.					
Aegilops caudata L	7		o o	3.6	24
" comosa Sibth. et Sm	7		18	1	21
" cylindrica	14		LONGLEY &	Sando,	1930;
		BLLIER, 1930a.			
	14	25	AASE, 1930.		
" cylindrica Host	14		Percival, 1930.		
			SENJANINOVA-KORCZAGINA,		
					1930.
" Heldreichii Holzm	7		40	4.9	
persica Boiss	14		٠,		0
Section Amblyopyrum					
(JAUB. et Sp.) ZHUK.					
Aegilops mutica Boiss	7		SENJANINOVA-KORCZAGINA,		
		•			1930.
Section Sitopsis (Jaun. et					
Sp.) Zhuk.					
Aegilops Aucheri ssp. virgata					
Zник	7		14	(9	49
" bicornis Jaub. et Sp	7		4.6	2.1	**
longissima (Schw. et					
Muscu.) Eig	7		19	11	
speltoides	7		LONGLEY & SANDO, 1930a.		
., speltoides Tausch	7		Senjaninova-Korczagina, 1930.		
Section Vertebrata(ZHUK.)					,50.
SENIAN.					
Aegilops crassu	21		LONGLEY & S	ANDO, 193	O
and the second s					

2-35 A MEN'S	AE (continued)	11	2n	
Segilofs (ce		33	20	
	crussa Boiss	21		Senjaninova-Korczagina,
				1930.
18	squarrosa	7		Longley & Sando, 1930.
r	squarrosa L	7		Senjaninova-Korczagina, 1930.
Section G	astropyrum			
(Jaub. e	t Sp., Zhuk. Sejan.			
Aegilops	ventricosa	14		Longley & Sando, 1930. Bleier, 1930c.
ıŭ.	ventricosa Tausch	14		Percival, 1930.
				SENJANINOVA-KORCZAGI NA, 1930.
Aegiiops h	ybrids:			
A egilops	cylindrica × A. ovata 23 +	$\frac{1}{101-31}$	28	Aase, 1930.
.,	cylindrica $ ext{Host.} imes A$.			
	oveta L	$-13 + \frac{14_1}{2}$	21	Percival, 1930.
13	cylindrica Host. $ imes A$.			
	ventricosa TAUSCH 6-	$-7 + \frac{16_1 - 1}{2}$	41	D 31
13	ovata L. × A. cylin-			
	drica Host 7-	$-13 + \frac{14_1}{2}$	21	n – n
**	ovata × A. triuncialis 0-	$7 + \frac{28_1 - 14_2}{2}$	1	Longley & Sando, 1930.
17	ovata × A. ventricosa			
	Тайзси 3-	$-7 + \frac{22_1 - 1}{2}$	41	Percival, 1930.
13	triuncialis $1 \times A.$			
	cytindrica Host 3	$-12 + \frac{22_1}{2}$	41	n n
,,	crassa × Triticum			
	vompactum 0-	$-7 + \frac{42_1 - 2}{2}$	81	Longley & Sando, 1930.
,,	crassa × Triticum di-			
	coccoides 0	$-5 + \frac{35_1 - 2}{2}$	51	9 9 9 9
O	crassa × Triticum di-			
	соссия 0-	$-6 + \frac{35_1 - 2}{2}$	31	n n n n

¹⁾ There was some evidence of tetravalents also.

GRAMINI	SAE (continued)	11	2n	
Atulops (c	continued)			
Aegilo ps	crassa Boiss	21		SENJANINOVA-KORCZAGINA,
				1930.
11	squerrusa	7		Longley & Sando, 1930.
27	squarrose L	7		Senjaninova-Korczagina, 1930.
Section G	astropyrum			
/ [AUE, c	et Sp., Zhuk. Sejan.			
Asvilops	s ventricosa	14		Longley & Sando, 1930. Bleier, 1930c.
	ventricosa Tausch	14		Percival, 1930.
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				Senjaninova-Korczagi na, 1930.
Augilops b	ybrids:			
Auvilop:	s cylindrica 🍫 A. ovata 2 -	3^{1}) + 3-8 + $\frac{10_{1}-3_{1}}{2}$	28	Aase, 1930.
	cylindrica Host. x A.			
	mata 1	$-13 + \frac{14_{1}-2}{2}$	21	Percival, 1930.
14	cylindrica Host. $ imes A$.			
13	ventricosa Tauscu 6	$-7 + 16_1 - 14_2$	1	0 11
.,	ovata L. / A. cylin-			
	driva Host 7	$-13 + \frac{14_1 - 2}{2}$	21	
-50	ovala 🛠 A, transcialis 0-	$-7 + 28_{1} - 14_{2}$	1	Longley & Sando, 1930.
	orala) A. ventricosa			
	Tausen 3	$-7 + \frac{22}{2} + \frac{14}{2}$	11	Percival, 1930.
-0	trumenalis L. $ imes$ A.			
	cylindrica Host 3	$\frac{1-12+\frac{22_1-4}{2}}{2}$	11	n n
	erassa 2. Triticum			
	compactum 0	$-7 + 42_1 - 28_1$	31	Longley & Sando, 1930.
13	crassa × Triticum di-			
	coecoides 0	$-5 + \frac{35}{2} + \frac{35}{2}$	51	n n n n
×i	crassa × Triticum di-			
	соесит 0	$-6 + \frac{35_1 - 23}{2}$	31	22 11 12 11

¹⁾ There was some evidence of tetravalents also.

	NEAE (continued) n 2u hybrids (continued)			
restrops	Talking du			
A081101	bs crussa × Triticum du-	LONGLEY &	Severe	1930
	rum $0-3 \div 35_1-29_1$	1,000,000	, 13/41/12/17	. 700.
,,	crassa × Trilicum po-			
	$lonicum \dots 0-4+35_1-27_1$	**	**	*1
,,	crassa × Triticum			
,,	$spelta$ $0-6+42_1-30_1$		**	
	crassa × Triticum tur-			
,,,				
	$\frac{gidum \dots 0-4+35_1-27_1}{2}$	15 21		
,,	crassa × Triticum			
	vulgare $\dots 0-7+42_{\frac{1}{2}-23_{\frac{1}{2}}}$	11	* **	,
	cylindrica Host. X			
,,	Triticum compactum			
	Host, var, rubriceps. 7+211	PERCIVAL,	1930.	
	2			
,,	cylindrica Host. ×			
	Triticum dicoccoides			
	Körn, var, rubrivil-			
	$losum$ $1-4 + 26_1 - 20_1$,			
	$\frac{2\delta_1}{2}$		14	
**	cylindrica Host. ×			
	Triticum dicoccum			
	Schüb, var. $jarrum \cdot 1 - 4 + 26_1 \cdot 20_1$,			
	$\frac{28_1}{2}$	"	FF	
	cylindrica × Triticum			
13		BLEICE, 19	9909 .	
	$\frac{durum}{2}$ $\frac{2\delta_1}{2}$	131211111111	707 J	
	2			
12	cylindrica × Triticum		2	
	durum (Kubanka) . 0-51)-1-281-181	Z6 AASE, 1930	j.	
**	cylindrica Host. ×			
	Triticum polonicum L. $1-4+26_1-20_1$,			
	2			
	281	PERCIVAL,	1930.	
	$\frac{28_1}{2}$			
1) (%)	- Charles de			

¹⁾ There was some trace of trivalents.

GRAMINEAE (continued) Aegilops hybrids (continued) Aegilops cylindrica / Tritioum polonicum 0-3+28₁-22₁ Longley & Sando, 1930. cylindrica Host, 7 Triticum Spelta 1.. var. $Duhamclianum = 7 \div 21_{\mathrm{I}}$ Percival, 1930. cylindrica × Triticum Spelta $\dots \frac{7+21}{2}$ BLEIER, 1930a. cylindrica z Trilicum turgidum $0-3+28_1-22_1$ Longley & Sando, 1930. cylindrica × Triticum $turgidum (Alaska) - .0-4^{1}) + 28_{1}-20_{1}$ 28 Aase, 1930. cylindrica Host. X Triticum targidum 1.. var. iodurum (Petianelli voire de Nice) , 1–4 + $\frac{26_1-20_1}{2}$, PERCIVAL, 1930. cylindrica Host. X Triticum vulgare Hosa, var. erythro $sprimum \dots 7+21_1$ cylindrica Hosr. X Triticum vulgare Host, var, militurum $7+21_1$ cylindrica × Triticum vulgare \dots $7+21_1$ BLEIER, 1930a. $cylindrica \times Triticum$ vulgare (Hessar). . $6-9^{1}) + \frac{23_{1}-17_{1}}{2}$ 35 Aase, 1930. $ovata - \times - Triticum$ compactum (hybrid 128) $0-3^{1}$) $+35_{1}-29_{1}$ 35 ,,

²) There was some trace of trivalents.

GRAMINEAE (continued) is 2n Asgilops hybrids (continued) Aegilops ovata L. × Triticum compactum Host. var. creticum $\dots \frac{35_1}{2}$ PERCIVAL, 1930. 2-3+311-291 ovata L. > Triticum dicoccoides Körn. var. Kotschyanum . 281, 1-3 + 261-221 ovata L. × Triticum dicoccoides Körn. var. spontaneonigrum 281, ovata L. × Triticum dicoccum Schüb, var. $Ajar \dots 28_1, 1+26_1$ ovata L. × Triticum dicoccum Schüb, var. ethiopicum . . . 28_1 , $1+26_1$ 28ovata L. × Triticum dicoccum Schüb, var. persicum Perciv. (= T. persicum Vav.). $0-1+28_1-26_1$ ovata × Triticum du-BLEILR, 1930a, c. ritm ovata × Triticum durum (Kubanka) . . 0-3+28₁-22₁ 28 Aase, 1930. ovata L. × Triticum durum Dese, var. aj-PERCIVAL, 1930.

GRAMINEAE (continued) n 2n Augilops hybrids (continued) Aegilops ovata × Triticum mo-BLEIER, 1930a, c. ovală 1.. \times Triticum
monococcum L... $\frac{21_1^2}{2}$, $\frac{2}{1-5+\frac{19_1-11_1}{2}}$ Percival, 1930. ovata I., × Triticum ovata L. × Triticum sphuerococcum Perctv. var. tumidnim . $\frac{35_1}{2}$ ovata L. × Triticum Spella L. var. coeru-ovata / Triticum Spelta (Alstroum) . . . $0-3+35_1-23_1$ AASE, 1930. ovata L. × Triticum turgidum L. var. mirabile \dots $\frac{28_1}{2}$ $1-2+\frac{26}{1}-24$ Percival, 1930. ovata × Triticum vil-BLEIER, 1930c.

1) There was some trace of trivalents.

²⁾ In one loculus of an anther several cells were found to contain 35 univalent chromosomes.

GRAMINEAE (continued) Aegilops hybrids (continued) Aegilops ovata L. X Triticum ruigare Host. var. al- $2-3+31_{1}-29_{1}$ Percival, 1930. triaristata × Triticum triuncialis L. × Tritieum dicoccoides Körn. var, $Kotschvanum = 1-3+26_1-22_1$ Percival, 1930. triuncialis L. × Tritieum dicoccoides Körn. var. rubrivillosum , $1-3+26_1-22_1$ triuncialis L. >: Triticum durum Dest. var. affine $1-6+26_1-16_1$ triuncialis L. × Tritieum Spella L. var. album 0-3+35₁-29₁ $triuncialis \ L. \ \times \ Triti$ cum lurgidum var. $tusitunicum \dots 1-3+26_1-22_1$ triuncialis L. × Triticum vulgare Hoss. var. militurum . . 1-5+33[-25]triuncialis × Triticum

""" truncialis × Truteum vulgare (Hussar) . . $0-3+35_1-28_1$ 35 Aase, 1930.

"" ventricosa Tausch. x

Triticum dicoccoides

Körn, var. Kotschyannum 0-2+28₁-26₁

Perctval., 1950.

, ventricosa Tausch. × Triticum dicoccum

	EAE (continued) n ybrids (continued)	2n	
	vas. farrum 0-(2)-1-28 ₁ -(2	2ó ₁)	Percival, 1930.
4 cuitobs	wentricosa Tausch. ×		
	Triticum monococ-		
	cum 1 21 ₁ ,		
	$\frac{cum 1 21_1}{2}$		
	1-4+191-131		31 D
	2		
17	ventricosa Tauscu. 🗵		
	Trilicum polonicum		
	1 0-2+28 ₁ -26	1_	D D
**	ventricosa Tausch. ×		
	Friticum turgidum L.		
	var, lusitanicum $0-2+28_1-26$	1	n n
	ventricosa × Triticum		
	$villosum \dots 0-4+21_{1}-13$	31	BLEIER, 1930c.
	ovata L. + Triticum		
	turgidum L. vav. mi-		
	rabile F_1		
	2		
	5-8 + 18 ₁ -12	28	Percival, 1930.
	2		
-	ovala L. « Triticum		
	turgidum 1., var. io-		
	$\frac{durum \dots \frac{2\ell_1}{2}}{2}$		и р
Triticu	m aczilopoides	14	Wakakuwa, 1930.
**	compactum	42	,, ,,
>1	compactum Hosr 21		Longley & Sando, 1930.
11	compactum Host, var.		
	ercticum 21		Percival, 1930.
.,	compactum Host, var.		
	rubriceps 21		n 9
11	compactum (hybrid	0.1	1020
	12a) $.0-1^{-1}$) $\div \frac{2!_1}{2}$	21	AAS6, 1930.
5.	compactum "Jenkin's		1020
	Club"		Thompson & Robertson, 1930.

 $^{^{1})}$ There was some trace of trivalents, $^{2})$ A small proportion of pollen-mother-cells showed 1 or 2 univalent chromosomes,

GRAMINE Triticum (co	AE (continued)	11	2п				
	dicoccoides	1-1		BEEFER, 1	930a.		
1 YM CHM	attoutoraes		28	Wararu	wa. 193	Ю.	
	dicoccoides Keke	1-1	20	Longley			
*1	dicoccoides Körn, var.	1.1					
11	Kotschvanum	1-4		Percivat	. 1930.		
	*	1.7					
**	dicoccoides Körn. var.	14					
		14		**	**		
"	dicoccoides Körn, var.	14					
	spontaneonigrum	14		**	"		
",	dicoccoides Wild Em-	1 4 35		Tuestico	St. R. 1270	BERTSON,	19:05
	mer''	14 1)	28	Wakaku			
,,	dicoccum		20			po, 1930.	
**	dicoccum Schrk	14		LONGLEY	oc oan	170, 1700.	
11	dicoccum Schüb, var.			T's	1030		
	Ajar	14		Percival	5, 1950.		
"	dicoccum Schüb, var.						
	ethiopicum	14		**	**		
"	dicoccum Schüв. var.						
	farrum	14		11	2.1		
,,	dicoccum Schüв, var.						
	persicum	14		11	• •		
,,	dicoccum "Khapli" .	14^{-1})		THOMPSE	ox & Ro	BERTSON,	1930.
D	dicoccum , Spring Em-						
13	mer''	14 1)		*1	**	**	+3
,,	dicoccum "Vernal" .	14-1)		**			12
	dicoccum "White						
	Spring Emmer"		28	JENKINS	& Tu	OMPSON,	1936.
,,	durum "Inmillo"	14^{-1})		Thompse	os & Ro	BERTSON,	1930.
			28	JENKINS	& THO	MPSON, P	30,
24	durum "Velvet Don"	1.4	28	Stevens	os, 193	0b.	
	durum Dest. var. aj-						
	fine	14		Perciva	L, 1950.		
	durum (30)		28	Wakaku	WA. 19	30.	
,,	monococcum	7		BLEIER,	1930a.		
,		7	14	AASE, IS	930.		
			14	Wakaku	.wa, 19	30.	
	monococcum L	7			.i., 1936.	0; Longi	.EV de
	751 l. 33			.74.831	., 1000.		
11	persicum "Black Per-	9 1 9.		7	v. D.	BERTSON	1.2 1.7
	sian"	141)	20				
11	persicum VAV		28	Nikola 1930.	EWA, Ęi	ven by V	ANAR,

 $^{^{1})\} A$ small proportion of pollen-mother-cells showed 1 or 2 univalent chromosomes.

	EAE (continued)	n	2n	
Triticum (
Triticun	r potonicum 1	14		Percival, 1930; Longley & Sando, 1930.
11	polonicum "Polish".	14 3)	28	Thompson & Robertson, 1930. Warakuwa, 1930.
	Spella	21	20	Longley & Sando, 1930.
3.3		Z. L	42	, and the second
	17. 1. 1	0.1	42	Wakakuwa, 1930.
31	Spelta L. var. album .	21		Percival, 1930.
11	Spella L. var. coeru-			
	leum	21		12
2 %	Spelta 1 var. Duhame-			
	lianum	21		11 12
23	Spetta "Spring Spelt".	21 1)		Thompson & Robertson, 1930.
*1	sphaerococcum Per-			
	civ. var. tumidum .	21		Percival, 1930.
19	turqidum	14		Longley & Sando, 1930.
		14	28	BERG, given by TSCHERMAK, 1933.
			28	Wakakuwa, 1930.
	turgidum ("Alaska").	14	28	AASE, 1930.
	turgidum L. var. iodu-			,
"	rum	14		Percival, 1930.
	turgidum L. vat. lusi-			, 1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
*2	lanicum	14		
	turgidum L. var. mi-			12
4.9		14		
	rabile	1 17		De Co
11	turgidum (Unnamed	2.4.15		Thompson & Robertson, 1930.
	from Tunis)	14 1)		
	villosum	7		BLEIER, 1930c.
		7	14	BERG, given by Tschermak, 1930.
**	vulgare	21		BLEIER, 1930a; Longley & Sando, 1930.
			42	Wakakuwa, 1930.
	vulgare \ ILL		42	VAKAR, 1930.
	vulgare Host, var, al-			
12	bidum	21		Percival, 1930.
	vulgare albidum (pro-	ew i		
α				
	geny of X-rayed		41,42	
	plants;		•	
			40+2fra	
			41+1 fr	
			43+2 tr	ag. Delaunav, 1930.
COMMENTAL TO BUILDING AS ASSESSED.	report should be self-time and the self-time and			

¹⁾ A small proportion of pollen-mother-cells showed 1 or 2 univalent chromosomes.

GRAMINE	AE (continued)	11	2n	
Triticum (c				
Triticum	vulgare Host, var.			
	erythrospermum	21		PEROIVAL, 1950.
	vulgare Host, var.			
	graecum	21		er e
,,,	vulgare Host, var.			
"	militurum	21		39
	vulgare Host, var.			
,,	Quality	21	42	Strvinson, 1936b.
	vulgare "Marquis" .	21 1)		THOMPSON & ROBERTSON, 1930.
21	1 11 2 11 11 11 11 11 11 11 11 11 11 11		42	TENKINS & ROBLETSON, 1930.
,,	vulgare "Turkey Red" 2	$20-21+\frac{2}{2}$	42	AASE, 1930.
	1 11111 1	21		Винтин, 1930b.
"	vulgare "Wilhelmina"	41		
"	vulgare normal spel-	1 20 / 1.		Hanassson, 1930a.
	toids	1,20-1-11		TEANASSONS, T.O.A.
1)	vulgare B. Heterozy-	20 1 1 10		
	gotes (speltoids) 2			10.20
		41 ₁ 3)		Mentzing, 1930c.
,,	vulgare C. Heterozy-			
	gotes (speltoids)	431 3)		Möntzing, 1930c.
		20+13		HARANSSON, 1970a.
	vulgare Subcompac-			
*1	tum (speltoids)	431 3)		MENIZING, DESS.
	tion (specimina)	2		
	2	$0+1_1+1$		
		frag.		HARANSSON, 1930a.
,,,	- PH10		23	Wakaruwa, 1930.
13	-30 × PH10		23	0 0
Triticum h	vbrids:			
**	dicoccoides × Seculo			
**	montanum	211		Longiev & Sando, 1950.
		2		
,,	durum (Kubanka) ×	*		
	Secule cereale (Ro-			
	SEN)	0-4+211-13	3 ₁ 21	Aase, 1950.
*1	durum var. melano-	4		

A small proportion of pollen-mother-cells showed 1 or 2 univalent chromosomes.
 HARANSSON, 1930a examined cultures from A. AKERMAN and NILSSON EHLE.
 This was one of NILSSON EHLE's forms.

(1.15 4.5 EX \$1.0	VE (and dimenti		0	
	AE (continued)	11	2n	
Frincian ay	brids (continued) fus No. 00122 × Sc-			
	vale coreale	21	21	1000
	une coreme	$\frac{21_1}{2}$	21	Plotnikowa, 1930.
Triticum	persional var. juligi-			
	nosum v Secalé ce-			
	reale	$\frac{21_1}{2}$	21	2) 21
	spella - Scoale mon-			
	tanum	0-3+281-2	21	Longley & Sando, 1930.
.,	speita (Alstroum) ×			
	Secule cereule (Ro-			
	\$HN}	0-41) + 281-	-20 ₁	Aase, 1930.
1.11	secalotricum Sabato-			
	vichse Meister (Tri-			
	tioum vulgare × Se-			
	cale cereale) F ₁	25+61	56	LEVITSKY & BENETZKAIA, 1930
		. 2		
14	vulgare > Secale ce-			
	nate	$\frac{28_1}{2}$		Longley & Sando, 1930.
		$0-4+\frac{28}{2}$	10 ₁	BLE1ER, 1930a.
7.5	vulgare (Triplet) ×	2		
,,	Secule cereale (Ro-			
		$0-3^{1}+28_{1}$	-22: 28	3 Aase, 1930.
	shN)		2	
	rulgare y. Secale mon-			
	tanum	$0-1+28_1-2$	26;	Longley & Sando, 1930.
		2	-	
	aegitopoides × T. di-			
	coccum			Kihara & Nishiyama, 1930.
		1_1+6+6_1 , $\frac{1}{2}$		
	1 :	$(1_2+1_2)+4$	+61.	
		2_3+4+7_1		
		33+3+61		
	compactum × T, mo-	-		
13	nococcum	$0-7+28_{1}-1$	41	Longley & Sando, 1930.
		2		

¹⁾ There was some trace of trivalents.

GRAMINE	(AE (continued)	Iτ	2n.				
Triticum	hybrids (continued)						
Triticum	dicoccoides > T. acgi-						
	Topoides 0	-5+21 ₁ -11 2	1	landar, i	930a.		
	dicoccoides × T. mo-						
15	ногоссия	-6+21 ₁ -9 ₁		$L((\times (i))) \cdot Y$	& SANI	n, 1930.	
.,	dicoccoides (Wild Em-						
.,	mer) / T. monococ-						
	cum 4	-7^{1}) + 11_{1} $\frac{1}{2}$	71 21	Aase, 193	0.		
	dicocenm × T. dicoc-						
29	coides	14 2)		Phomeso	s & Roi	GRISON	, 1930.
.,	dicoccum (Vernal) ×						
33	T. dicoccum (Khapli)	14 3)			,	4.5	+9
,,	dicoccum × T. mo-						
,,	nococcum	$7 + 7_1$		Кинака 3	g Nisin	улми, 1	93U.
		$7 + \frac{7_1}{2}$					
"	dicoccum × T. persi-						
,,	cum Vav	1.4		Varak. 1	930.		
1)	dicoccum × T. polo-						
"	nicum	14 2)		Тномево	n & Roi	SERISON	, 1930.
,,,	durum × T. dicoccoi-						
,,	des	1.4 2)				2.8	**
	durum (Kubanka) ×						
	T. dicoccoides (Wild						
	Emmer)	$11-14^4)+2_1$	-0 ₁ 28	Aasii, 19	30.		
**	$durum \times T$, $dicoccum$	1.4.9)		Thompse	is & Ro	BERISON	, 1930.
	durum × T. dicoccum						
	(Khapli)	14 31		75	3.3	9.1	
	durum (Kubanka) ×						
	T. monococcum (Ein-						
	korn)	$4-7^{1}$) $+\frac{13_{1}}{2}$	-7 ₁ 21	Aase, 19	ŰŲ.		
.,	durum × T. persicum	14 2)		THOMPSO	s & Ro	BERTSON	,1930.
,,	durum × T, polonicum	14 2)		19		0	**
**	durum (Kubanka) ×						
	accommodate 4						

There was some trace of trivalents.
 This hybrid showed only a slightly greater amount of irregularity, in the presence of 1 or 2 univalents than the parental species.
 A considerable percentage of the pollen mother cells showed 1 or 2 univalents.

much higher than found in the parental species.

4) There was some trace of tetravalents.

```
GRAMINEAE (continued)
Triticum hybrids (continued)
              T. polonicum (Po-
             lish) . . . . . . . . 13-14+2_1-0 28 Aase, 1930.
   Triticum durum (Kubanka) ×
             T. wilgare (Macquis) 12-14^4) + \underbrace{11_1 - 7_1}_{2} 35 \dots
      _{m} durum \times T. vulgare . 14+71,

  \begin{array}{c}
    13 + 9_1 \\
    \hline
    2 \\
    1_1 + 13 + 6_1, \\
    \hline
    2
  \end{array}

                                     2_3+12+\underline{5_1}.
                                                        Kihara & Nishiyama, 1930.
          durum Line 00122 ×
              T. vulgare Line
                                                     SAPEHIN, L., 1930.
              00274) F_1 \dots 14 + 7_1
          durum Line 00122 X
              T. vulgare Line
              (00274) F_2 \dots 14+7_1
                                    to 21 + 0_1
           durum Line 60122 ×
              T. vulgare Line
              00274) F<sub>2</sub> Plant #
              135 \dots 16 + 41
               F, Plant 135 . . . 16+21,
      _{\odot} durum Line 00122 	imes
              T. vulgare Line
              00274; Plant 183 . . 14+7<sub>1</sub>
            durum Line 00122 ×
              T. vulgare Line
               00274) F3 of Plant
```

¹⁾ There was some trace of trivalents & tetravalents.

GRAMINEAE (continued) Triticum hybrids (continued) 183 14, 14 . 6]. 15 -41. 16-31, 16+51, SAPERIN, L., 1936. $17 + 4_1$ Triticum durum (Velvet Don) : T. vulgare (Qual-35 STEVENSON, 1936#. b. ity) F₁ 14--7₁ durum (Velvet Don) : 7. vulgare (Quality) F₂ 1) 14; 14 \pm 11; 28, 29. $14+2_1;$ 30. 32, 15-1-21: 14-71; 35, $17 + 4_1$; 21 38,42, 14304. durum (Velvet Don) × T. vulgare (Quality) F₃ 2) from F₂ $(2n = 42) \dots$ 42 durum (Velvet Don) × T. vulgare (Quality) F₃ 3) from F₂ $(2n = 38) \dots 15 + 31$: $15 + 4_1$: 33, 54, 16-44; 17+41; 36,38, 21. 42.

⁾ Of the 24 F_e plants 11 had 25; 3, 29; 2, 30; 1, 32; 1, 35; 1, 53; and 5, 42 sematic chromosomes.

 $^{^{\}circ}$) Two F₃ lines of 13 and 11 plants respectively were grown with 42 chromosomes.

³⁾ Five F₂ plants were grown.

Triticum h	AE (continued) ybrids (continued)	11.	2a .		
Leavelon	durum (Velvet Don)				
	× T. rulgare (Qual-				
	ity) F_3 i) from F_2				
	(2n unknown)	,	28,		
		$14+1_1;$	29,		
		$14 + 2_1$;	30,		
		$14 + 2_1;$ $\frac{1}{2}$			
		$14+7_1;$	35,		
		18 + 3: 21.	. 39, 42,	STEVENSON	, 19306.
		2	,		
	durum (Velvet Don)	_			
• • • • • • • • • • • • • • • • • • • •	× T. vulgare (Qual-				
	ity) F ₃ * _J from F ₂				
	$(2n = 30) \dots$		23		
	durum (Velvet Don)			1,7	,
22	× T. vulgare (Qual-				
	ity) F ₃ ³) from F ₂				
	$(2n = 29) \dots$		28		
			20	4)	"
	durum (Velvet Don)				
	Z T. volgare (Qual-				
	ity) F ₃ ⁴) from F ₂		20		
	(2n == 28)		28	**	"
11	vulgāre (Marquis) ×				
	T. durum (lumillo)				1020-
	- Marquillo			**	1930a.
>1	persionm VAV. × T.				
	rulgari Vita	$\frac{14+7_1}{2}$		Vakar, 193	0.
	polonicum A T. mo-				
	пососсит	$0-5+21_{1}-$	111	Longley &	Sando, 1930.
	Spelta < T. compac-				
17	tum			THOMPSON	& Robertson, 1930.
*,	Spella x T. monococ-				
**			-7 ₁	LONGLEY &	SANDO, 1930.
	cum	11)		· ·
11 ()1 41	he o plants 3 had 28; 1	20 1 30	. 1 35.1	39 and 1	42 somatic chromo-
9 01 6	ne o prants o mad 20; 1	, 27, 1,00	, .,, .	,,,	

somes.

Bibliographia Genetica X

The F₃ plants were grown with 28 somatic chromosomes.

3) Twelve F₃ plants were grown with 28 somatic chromosomes.

4) Two F₃ lines of 3 and 6 plants respectively were grown with 28 somatic chromosomes.

³) A considerable percentage of the pollen mother cells showed 1 or 2 univalents much higher than found in the parental species. 15

GRAMINEAE (continued) Triticum hybrids (continued) Triticum Spella × T. persicum VARAR, 1300. Spella × T. aegilopoides. 7 + 141. $(1_2+1_2)+5+14_1$, 13+5+151, $2_3 + 4 + 14_1$ Kihara & Nishiyana, 1930. 13 + 7 + 111 turgidum × T. dicoc-THOMPSON & ROBERTSON, 1930. 14 1) coides $turgidum \times T$, dicoc-(-1, -1)сит turgidum × T. mono-LONGLEY & SANDO, 1950. turgidum × T. persi-THOMPSON & ROBERTSON, 1930. εum 14 1) turgidum × T. polo-14 1) nicum turgidum × T. villosum F, (Turgidovil-21 Bern, given by Tscherman, losum) 1930. turgidum × T. villosum F2 (Turgidovil-BERG, given by TSCHERMAN, losum) 1936. vulgare × T, compac-THOMPSON & ROBERTSON, 1930. 21^{-2}) tum.

This hybrid showed only a slightly greater amount of irregularity, in the presence of 1 or 2 univalents than the parental species.

^{*)} A considerable percentage of the pollen mother cells showed 1 or 2 univalents much higher than found in the parental species.

GRAMINEAE (continued)	11	211				
(riticum hybrids (continued)						
Triticum vulgare × T. dicoc-						
cum F ₂	14,					
	$14 + 1_1$,					
	$14 + 2_1$					
	14+31,					
	14+41,					
	$14 + 7_1$,					
	17 + 41		ENKINS	& Тно	MPSON.	1930.
vulgare × T. dicoc-					,	
сит F3	14,					
,	$14 + 1_1$,					
	$14 + 2_1$					
	$14 + 3_1$					
	$14+4_{1}$					
	$14 + 6_1$					
	16+51,					
	17+41,					
	18+31,					
	19+21.		**		,,	11
vulgare × T. durum						
	14,					
	$14+2_1$,					
	$14 + 4_1$,					
	$16 + 5_1$					
	17+41,					
	18+3 ₁ ,					
	19+21,					
	20+11.		,,	11	,,	,,
., vulgare × T. durum	·					
F_2	14,					
	$14 + 1_1$,					
	$14 + 2_1$,					
	$14 + 4_1$					
	14+61,					
	$14 + 7_1$,					
	16 + 5 ₁ ,					
	17+41,					
	18+3 ₁ ,					
	$19+2_1$,					
	$20+1_1$,					
	21.		,,	13) >	>2
, vulgare × T, mono-						
coccum	$4-7+20_1-1$	¹ 1	Longley	* & SA	NDO, 193	30.
	2					

RAMINEAE (continued)	IJ	2n			
riticum hybrids (continued)	$0-5+\frac{23}{2}$	18 [BLETER,	1935д-	
Triticum vulgare :: 1. spella .	213)		THOMPSO	N & ROBERTS	s, 194
" dicoccoides × Aczi- lops ovata	$\frac{28_1}{2}$		BLEIER,	1930a.	
" Spelta (Alstroum) × Acgilops cylindrica .	4-5,2)+	35	Aase, 19	30.	
	251-191				
, vulgare Host. var. graecum × Aegilops ovata L	35 ₁ ,				
	2 2-3+31 ₁ -	291	PERCIVA	u., 1930.	
Hordeum bulbosum Linn	14		GHIMPU.	. 1930.	
" cornutum bort. VIL-	14				
MORIN	1 **		*1	***	
MORIN	14		*1	11	
,, distichum nutans a var. Princess of Svä-					
lol β " distichum nutans β	1.4		1)		
var. Issondum	14		19		
" distichum nutans spontanaccum hort					
Vilmorin ,			**		
thrope				4	
" hexastichum	14		**	*1	
" hexastichum trifurca-					
tum album monstru-					
osum hort. VILMORI			* *	**	
" maritimum WITH			£ 5	**	
" murinum Linn			**	100	
" nigrum	,		**	**	
" nudiramulosum hort Vilmorin					
VILMORIN			**	14	

A considerable percentage of the pollen mother cells showed 1 or 2 univalents much higher than found in the parental species.
 There was some trace of trivalents and tetravalents.

CRAMIN	EAE (continued)	11	211	
Hordenm	(continued)			
Horden	m wudum	14		Онімер, 1930.
• • • • • • • • • • • • • • • • • • • •	secalinum Schreb	28		, , , , , , , , , , , , , , , , , , , ,
**	tetrastichum	14		,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,
,,	thyrsoideum hort. Vn-			1) 12
	MURIN	14		,,
1)	vulgare Branching			, ,
	hort, VILMORIN	14		2, 1)
1)	milgare Escourgeon			" "
	d'Algérie	14))
,	zcocritum	14		"
11	nigrescens × trifurca-			
	tum hort. Vilmorin	14		22
.,	nigrum × trijurcatum			
	hort. Vilmorin	14		"
**	Steudeli × trifurca-			
	tum hort. Vilmorin	14		<i>p</i> ,,
SPATHIE	LORAE			
ARAČEA	E			
Arum c	ornutum	16	32	Haase-Bessell, 193
FARINO	SAE			
	JNACEAE			
Cyunot	is cristata	12		Rau, 1930.
Khowa	liscolor Hance	12 1)		Като, К., 1930а.
		2		
		6 ²)		" " 1930 <i>b</i> .
LILIIFLO	RAE	ó ²)		" "1930 <i>b</i> .
LILHFLO		ó ²)		" "1930 <i>b</i> .
LHIACE		6 ²)		" "1930 <i>b</i> .
LILLACE Melantu	Alt	6 ²)		" " 1930 <i>b</i> .
LILIACE MELANTO 1. Tofi	AE modeae ³)	6 ²)	28	" 1930 <i>b</i> . Miller, 1930.
LILIACE MELANTH 1. Tofi A. Tofick	AL foldeae ³) e l d i e a e	6 ²) 15	28 30	,, ,,
LALIACE MELANTH 1. Tofi A. Tojich	Al: 101DEAE ³) e l d i e a e lia calyculata	,		Miller, 1930.
LHLIACE MELANTH I. Tofi A. Tofich Narthe	AE IOIDEAE 3) e l d i e a e lia calyculata palustris	15		Miller, 1930.
LHLIACE MELANTH 1. Tofi A. Tofich Narthe II. Hel	Al: 101DEAE ³) e l d i e a e lia calyculata palustris cium ossifragum	15		Miller, 1930.
I.H.I.ACE MELANTH I. Tofi A. Tofick Narthe II. Hel Aeroph	Al: IDIDEAE 3) e l d i e a e liu calyculata palustris cium ossifragum	15	30	Miller, 1930.
I.H.I.AC E. MELANTH 1. Tofi A. Topich Narthe II. Hel A croph	Al: 101DEAE 3) e l d i e a e lia calyculata palustris ccium ossifragum o n i e a e yilium asphodeloides	15	30 30	Miller, 1930.

¹⁾ The chromosomes were arranged in diakinesis in a ring and there was no tendency

a) Although the normal number of chromosomes in this plant was 6; 5 and 7 chromosomes were found as the result of unequal distribution towards the poles.
 b) Classification of the Melanthioideae as studied by MILLER is according to ENGLER

[&]amp; PRANTL.

LILIACEAE (continued) n	2n		0.1.0	
Zygadenus chloranikus		MILLER, 1	400.	
elegans	32	*11	*1	
,, Fremonti	22		17	
Veratrum nigrum	32	**	.,	
" album	16(?) 1)		•	
IV. Uvularieae				
Gloriosa superbu	22	*1	14	
Twienglas macrohoda	26			
" pilosa	26	*1		
stolonifera	26	**	11	
V. Anguillarieae				
Baeomeira columelloidea	22	1.4	1>	
VI. Colchiceae				
Bulbocodium vernum	22	12	14	
Asphodeloideae				
Eremurus spectabilis M. B.				
var. Regeli		PROSINA,		
Hemerocallis fulva 6		LAWREN		
Allium odorum 12		MESSERI	1930.	
" roseum v. bulbilliferum. 24		.,	**	
Nothoscordum fragrans Kunth.	ló	KOERPER	исн. 1930.	
Lilium japonicum Thunb 12		Nagao,		
,, regale		Sax, K.,	1930€.	
" tigrinum KER GAWL . 123, or				
" 113 to 1	53			
+ biv, a				
univaler	its 36	Takena 1930.	ka & Nagama	rsu,
Fritillaria imperialis Nos. 2, 3, 5	24	DARLING	iton, 19350.	
1 1 1 1 1 Non d 10%	24 + 3			
imperiaris Nos, 4, 107	frag.	*4	71	
imperialis, No. 13 3)	24-(-6 or			
" imperians, No. 10	24+123)		
	frag.		**	
,, imperialis var. Crown				
upon Crown 2)	24 + 3			
apon crown ;	frag.		31:	
imperialis var. maxi-				
ma Red	24+1			
ma Kea	frag.	(1)	14	
	11.08.	11	**	

Preliminary count.
 Pollen mother-cells of this variety were studied in detail.
 The 12 fragments appeared in the flower buds of a plant having 6 fragments in the roof-tip.

LILIACEAE (continued) Eritillaria (continued)	n	2n	
Eritillaria (continued) Eritillaria imperialis var. maxi-			
ma Yellow		24	1230
		24	Darlington, 1930b.
" emperiutis var. Oran- ge Brillant		24 + 1	
se oman		frag.	
, imperialis var. Yel-		11.112.	. 10
, imperiatis var, xet-		24+6	
<i>inc</i>)		frag.	
" meleagris		11 ag. 24	Newton & Darlington, 1930.
Tulipa Gesneriana var. Keizers-		24	TENTON & DARBINGTON, 1755.
kroon		36	DE Mol, 1930.
Gesneriana vav. Murillo		23,24	DE 1104, 1900.
" Gesneriana var. Pink		20, 2.	12 22 22
Beauty		36	33 33 23
Eucomis undulata L.' HÉR		30	Koerperich, 1930.
Hyacinthus orientalis var. La			TEODIC SILEON, 1700.
Fictor	8 2)		Stow, 1930.
orientalis var. La	- /		2.0,
Grandesse		28	DARLINGTON, 1930c.
Bellevallia azurca Fenzu		18	LEWITSKY & TRON, 1930.
montana		3	Trankowsky 3), 1930b.
Withelmsii (Stev.)			,
G. Wor		8	LEWITSKY & TRON, 1930.
Muscari moschutum Willd		18	, , , , , , , , , , , , , , , , , , ,
" polyanthum Boiss		18	11 12 11 11
руспанthum С. Коси.		16	n n n n
Rusous aculeatus 1		36	Fernandes, 1930c.
Convallaria majalis L	ca. 16		Trankowsky, 1930a.
Paris hexaphylla CHAM. 1 & II.	5	10	Gотон & Stow, 1930.
" hexaphylla Cham. III	53	15	33 37 39 13
, tetraphylla A. GRAY	5	10	23 27 59 23
Trillium apetalon Makino		20	2) 22 23 23
" Kamtschaticum PALL.	5	10	22 22 22
Tschonoskii Maxim		20	23 23 29 33
" T. var. rupho-purpu-			
reum Tatewaki		20	23 22 23
" (Japanese variety) .		10	33 23 23 23
" (Japanese variety) .		20	32 33 33 33
Smilas herbacea	13		LINDSAY, 1930.
Smilax herbacea	13		LINDSAY, 1930.

Pollen mother-cells of this variety were studied in detail.
 The observation was made in giant pollen grains.
 From preparations by Delaunay.

MARYLI	ADACHAE	15	žai		1899
	s nivatis L	10			sky, 1900a.
Amaryili	s belladonna L		26 F	EENANDI	s, 1930c.
Narcissu	s butinocodium 1 var.				
	ценитив		2.5	12	1930a.
*1	bulbocodium 1 var.				
	nivalis		1.4	*1	· ·
	calciola Mend		12		1930 <i>h</i> .
,	gaditanus Bss. et				
	REUT. var. minuti-				
	florus Wk		12	14.0	12
.,	jonquilla L. var. jon-				
	quilloides WK			11	"
,,	minor L		14	**	
,,	odorus L		10	1>	19
,,	pseudo-narcissus L.				
,	var, bicolor L		28		0
29	pseudonarcissus var.				
	Grandee 7	3+1 ₁		Vadao, 1	
,,	reflexus Brot			FERNAND	rs, 1957h.
**	rupicola Dur		12	**	4.6
	scaberulus Henriq		12	11	44
,,	tazetta 1		10		0
	tazetta L. var. A ₂₂				
	("albae" type)	10, 11		Nagao, 1	930à.
12	tazetta L. var. of al-				
	bae type 1	0, 114)		., 1	950a.
,,	tazetta L. var. B20 (bi-				
	colores type)	11		Nagao, i	9304.
,,	tasetta L. var. B ₂₁ (bi-				
	colores type)		21	3.7	.,
11	tazetta L. var. B ₃₁ (bi-				
	colores type)		31	**	2.9
1)	tazetta L. var. Chinese				
	Sucred Lily	103	30	٠,	17
	tazetta L. var. Frank-				
	lin	10	20	D.	24
		10		.,	1930a.
,,	tazetla L. var. Luna .		32	27	19306.
",	tazetta L. var. Soleil				
	\dot{a} 'Or		aD		19
1)	tazetta L. var. Yellow				
	Prince		30	2+	**

 $^{^{\}rm 1})$ In the heterotypic metaphase two kinds of pollen mother cells were found, one with 10 and the other with 11 chromosomes.

AMARYLLIDACEAE (continued)	12	2n		
Narcissus triandrus L		14	FERNAND	es, 1930b.
Pancratium ceylanicum ca	. 45		.,	1930c.
" maritimum L		18 or 20	22	,,
" speciosum	10-50			,,
Agave Sisalana Perrine	7	14	CATALANG	, 1930.
Beschorneria Yuccoides Kunth.		60	Koerper	юн, 1930.
IRIDACEAE				
IRIS				
Section Juno				
Iris aluta Poir		24	SIMONET,	1930c.
" bucharica Foster	11		**	1930a.
" caucasica Hoffm		13	**	1930c.
	9		,,	1930b.
" orchioides CAR		22	"	1930a.
" persicu	13		.,	1930b.
" persica L. var. Heldreichi				
hort. = I. stenophylla				
Hauss		26	,,,	1930c.
, sindjarensis Boiss, et Hauss.		22	,,	1930a.
	11		,,	1930b.
Section Evansia				
Iris milesii Baker		26	1,1	1930a.
, tectorum Max		28	**	1930c.
	14			1930Ъ.
Section Reticulata				
fi is reticulată Bilb	10		,,	1930c.
Section Xiphion				
Iris Tingitana Boiss	21		12	1930a.
" Tingitana Boiss, et Reut.	14		"	1930b.
, Tingitana var. Fontanesii				
Boiss	14	28	,,	1930a.
. Xiphium L. var. Battan-				
diari Fost		36	**	1930ε.
" Xiphium L. var. praecox				
hort	17		33	1930b.
Séction Regelia				
Iris Korolkowi Regel var. con-				
color hort		44	2.0	1930a.
Korolkowi Regel var. vio-				
lacca hort		22	,,,	1930a.
	11		**	1930b.
Leichtlini REGEL		44	**	1930a.
	22		11	1930b.

		4		
IRIDACEAE (continued)	11	31/		
Tris (continued)				
Section Pogoniris			SIMONE	17125.0
Iris Alberti Regel	1.2		RIMONE	, interest.
" Alberti Regel var. semper-				
<i>ilorens</i> hort	1.2			**
" albicans Lange 1)		44	**	**
" Kashmiriana Baker ¹)		51	23	**
"Kochii A. Kerner")		44	**	
" macrantha hort	24		**	19308.
" mesopotamica Dykes		48	21	1930€.
, olbiensis Hen. var. alba ma	a-			
jor hort	20		17	19308.
" pallida Lamk, var. Edina				
hort	12		**	**
" plicata Lamk	12			11
" Ricardi hort		4.9	13	1930a.
" subbiflora Brot		40	"	5.0
" subbiflora Brov. var. ma-				
jor hort		40		*1
variegata I	12		11	19300.
Section Apogon				
Iris Bulleyana Dykes		45		1930c.
" chrysographes Dykes		40		**
" Forrestii Dykes		$4\dot{\phi}$		
Control and a Marcon 25		40	**	
" spuria L. var. maritima Lam.		38		1930a.
" Wilsoni Wright		40		
Section Onocyclus				
Iris acutiloba C. A. MEY		20		1930v.
m 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		20		
"		20		1936a.
" iberica Hoffm	10			19306.
iberica Hoffm, var. ochra-				
cea Reg		26		1930a.
Mariae Barbly		20		1930€.
" Mariae Darbis	10	20		19300.
	10		"	19308.
" paradoxa Stev	40		11	19308
" susiana L	4.6	20	**	19300.
" urmiensis Hoog	1.0	ث د		19308
	10		,,	1.2425/02

¹⁾ This is a hybrid and there were a number of monovalents in the police mother-

cells.

2) This is a form of Iris ensate Thung.

Tris (continued) Iris hybrids: Iris andromaque hort. (I. Korrolkowi Reg. var. violacea hort. × I. Mariae Barb.) "Béatrix hort. (I. Korolkowi Reg. var. violacea hort. × I. susiana L.) "Orestes hort. (I. Korolkowi Reg. var. violacea hort. × I. Leichtlini Reg.) "Polymaic hort. (I. Korolkowi Reg. var. violacea hort. × I. Leichtlini Reg.) "Polymaic hort. (I. Korolkowi Reg. var. violacea hort. × I. herica Hoffm.) "cancasica Hoffm. × I. sindjarcusis Boiss. et HAUSS. "iberiea Hoffm. × I. pallida Lamk. "Leichtlini Reg. × I. macrantha hort. "Leichtlini Reg. × (I. paradoxa Stev. × I. iberiea Hoffm.) "olbiensis Hen. var. alba major hort. × I. Korolkowi Reg. "pallida Lamk. var. edina hort. × I. korolkowi Reg. "paradoxa Stev. × I. variegata L. "paradoxa Stev. × I. variegata L. "paradoxa Stev. × I. variegata L. "indiarensis Boiss. et Hauss. "paradoxa Stev. × I. palicata L. "paradoxa Stev. × I. palicata L. "indiarensis Boiss. et Hauss. "paradoxa Stev. × I. palicata L. "indiarensis Boiss. et Hauss. × I. persica L. "indiarensis Boiss. et Hauss. × I. persica L. "indiarensis Boiss. et Hauss. × I. persica L. "indiarensis Boiss. et Reut. "Indiana Boiss. et Reut. "Indi	IRIDACEAE (continued)	n	2n		
Iris andromaque hort, (I. Korolkowi Reg. var. violacea hort, × I. Mariae Barb.) Béatrix hort, (I. Korolkowi Reg. var. violacea hort, × I. susiana L.) Orestes hort, (I. Korolkowi Reg. var. violacea hort, × I. Leichtlini Reg.) Polymnie hort, (I. Korolkowi Reg. var. violacea hort, × I. Leichtlini Reg.) polymnie hort, (I. Korolkowi Reg. var. violacea hort, × I. iberica Hoffm.) cancasica Hoffm. × I. sindjarensis Boiss. et Hauss. iberica Hoffm. × I. pallida Lamk. Leichtlini Reg. × I. macrantha hort. Leichtlini Reg. × (I. paradoxa Stev. × I. iberica Hoffm.) olbiensis Hen. vat. alba major hort. × I. Korolkowi hort. olbiensis Hen. vat. alba major hort. × I. korolkowi Reg. pallida Lamk. vat. Edina hort. × I. korolkowi Reg. pallida Lamk. vat. Edina hort. × I. variegata L. pallida Lamk. vat. Edina hort. × I. variegata L. paradoxa Stev. × I. v	Iris (continued)				
rolkowi Reg. var. violacea hort. × I. Mariae Barb.) Béatrix hort. (I. Korolko- wi Reg. var. violacea hort. × I. susiana L.)	Iris hybrids:				
hort. × I. Mariae Barb.) Béatrix hort. (I. Korolkowie Reg. var. violacea hort. × I. susiana L.) Orestes hort. (I. Korolkowie Reg. var. violacea hort. × I. Leichtlini Reg.)	Iris andromaque hort. (I. Ko-				
"Béatrix hort. (I. Korolko- aci Reg. var. violacea hort. × I. susiana L.)	rolkowi Reg. var. violacea			1	
nort. × I. susiana L.)	· ·		21	SIMONET,	19306.
hort. × I. susiana L.)	" Béntrix hort. (I. Korolko-				
"Orestes hort. (I. Korolko- wi Reg. var. violacea hort. × I. Leichtlini Reg.)	wi Reg. var. violacea				
wi Reg. var. violacea hort. × I. Leichtlini Reg.)	hort. × I. susiana L.) .		21	22	,,
hort. × I. Leichtlini Reg.)	" Orestes hort, (I. Korolko-				
Reg.)	wi Reg. var. violacea				
mori Reg. var. violacea hort. × I. iberica Hoffm.) caucasica Hoffm. × I. sin- djarensis Boiss, et Hauss. iberica Hoffm. × I. pal- lida Lamk	hort. × I. Leichtlini				
hori Reg. var. violacea hort. × I. iberica Hoffm.) "cancasica Hoffm. × I. sin- djarensis Boiss. et Hauss. "iberica Hoffm. × I. pal- bida Lame	Къс.)		32	,,	11
hort. × I. iberica Hoffm.) "caucasica Hoffm. × I. sindjarensis Boiss. et Hauss." "iberica Hoffm. × I. pallida Lamk	" Polymnic hort. (I. Korol-				
mediatensis Boiss, et Hauss. diatensis Boiss, et Hauss. iberica Hoffm. × I. pallida Lamk. Leichtlini Reg. × I. macerantha hort. Leichtlini Reg. × (I. paradoxa Stev. × I. iberica Hoffm.). ibliensis Hen. × I. Korolkowi hort. ibliensis Hen. var. alba major hort. × I. Korolkowi Reg. pallida Lamk. var. Edina hort. × I. tectorum Max. paradoxa Stev. × I. variegata L. sindjarensis Boiss. et Hauss. × I. persica L. urmiensis Hoog. × I. plicata Lamk. ibliensis Hoog. × I. plicata Lamk. ibl	kowi Reg. var. violacea				
djarensis Boiss, et Hauss. iberica Hoffm. × I. pallida Lamk. Leichtlini Reg. × I. macerantha hort. Leichtlini Reg. × (I. paradoxa Stev. × I. iberica Hoffm.). ibliensis Hen. × I. Korolkowi hort. ibliensis Hen. var. alba major hort. pallida Lamk. var. Edina hort. × I. tectorum Max. paradoxa Stev. × I. variegata L. pallida Lamk. var. Edina hort. paradoxa Stev. × I. variegata L. paradoxa Lamk. paradoxa L. paradoxa L. paradoxa L. paradoxa Stev. × I. variegata L. paradoxa L.	hort, \times 1. iberica Hoffm.)		21	**	**
"iberica Hoffm. × I. pallida Lamk	" caucasica Hoffm. × I. sin-				
lida Lamk	djarensis Boiss, et Hauss.		20		.,
"Leichtlini Reg. × I. ma- crantha hort					
crantha hort	lida Lamk		22	,,	**
"Leichtlini Reg. × (I. paradoxa Stev. × I. iberica Hoffm.)	" Leichtlini Reg. $ imes$ I. ma-				
radoxa Stev. × 1. iberica HOFFM.)			46	**	**
HOFFM.)	•				
" olbiensis Hen. × 1. Korolkowi hort					
kowi hort			32	"	*>
major hort. × 1. Korol- kowi Reg					
major hort. × 1. Korol- kowi Reg			31	**	*1
kowi Reg					
nort. × I. tectorum Max. 26 , , , paradoxa Stev. × I. variegata L	,				
hort. A I. lectorum MAX. " paradoxa Stev. X I. variegata L			42	**	"
" paradoxa Stev. × I. variegata L			0.4		
gata L			26	3.3	"
mindjarensis Boiss. et Hauss. × 1. persica L	"		22		
HAUSS. X I. persica L			22	1)	**
numiensis Hood. × 1. pli- cata LAMK	· ·		24		
cata Lame			24	13	**
"Niphium L. var. praecox hort. > I. tingitana Boiss. et Reut			22		
hort. > I. lingitana Boiss. et Reut			44	21	1)
Boiss, et Reut					
Bulbous Iris variety "David Bliss"			31		
Bliss"			O.	**	,,
Bulbous Iris variety Wedge-	•		31		
			Ų.	,,	"
wood:	·		31		
	wood			,,	**

MICROSPERMAE	11	2h		
ORCHIDACEAE	12			
Subfamiliy I. Diandrae				
Tribel. Cypripediloidea				
Cypripedium spectabile	11	1	LUFFMANN	. 1907.
Phragmopedilum candatum R.		32		10
Paragmopeatium eunaciam C. Sedeni Pruz.		17.64		1,
(P. Schlimii × longifolium).	12	24		
	12	24		.,
"Cypripedium Blenheimense")		6a	**	
Paphiopedilum Chamberlainia-		32		
num Pritz.	1.7	92 89. 32	**	**
" insigne Prinz	ca. 16	401. OK	11	٠,
" Lecanum (P. in-				
signe × Spice-				
rianum)	ca. 12	24	- 0	
" purpuralum				
Priiz	ca. 24	ca. 49	*1	
Subfamily II. Monandrae				
Division II. Acrotonae				
Tribe III. Polychondreae				
Subtribe Listereac				
Listera ovata R. Br	17		-1	
Subtribe Vanilleae				
Vanilla planifolia Andr		3.2		
Tribe IV. Kerosphaereae				
Series A. Acranthae				
Subtribe Pleurothallidea	e			
Stelis atropurpurea LDL	16			
" miersii LDL		32		
Phyosiphon carinatus LDL	ca. 16			
Loddigesii Lpt	ca. 16			
Subtribe Liparideae				
Microstylis L. C. Rich. spec	ca. 20		**	
Subtribe Coelogyneae				
Coelogyne fimbriata Lut	20		.0	
llennosa Rolfe (Pty-				
chogyne Hexuosa				
l'fitz.)	20		,,	
juliginosa LDL	20		.,	.,
Dendrochilum glumaceum LDL.			.,	
(Platyclinis glumacca Bru.) .	20			
Pholidota conchaidea LDL	20			
л погласия сопсиенией БИ	49			*1

 $^{^{-1}}$) A hybrid of the genus Phraymopedilum or Paphiopedilum but still going under the name Cypripedium.

ORCHIDACEAE (continued)	n	2n		
Subtribe Laelicae				
Epidendrum Linkianum	ca. 20		Hoffmann,	1930.
" nocturnum Lol	20		3.	13
" ranijerum Ldl	20		**	,,,
Calileya Trianac Rons	20		**	,
Lactiovátileya Canhamiana (Lac-				
lia purpurata Ld × Catt-				
leva Mossiae Hook.) Laelia				
tenebrosa Rolff superba	2 0		1)	"
Subtribe Dendrobieae				
Dendrobium chrysotoxum Ldl.	20		"	"
,, infundibulum LDL.	20):	,,
" nobile LDL		ca. 20	""	,,
" thyrsiflorum Rchb.				
f	20		**	13
" Wardianum WARN.				
var. giganteum Williams &				
Moore		40	"	27
Polystachya polychaete	ca. 20		ir	,,
Subtribe Lycasteae				
Bifrenaria Harrisoniae Rcнв. f.		40	**	"
Lycaste aromatica L.D	20		13	22
Subtribe Zygopetaleae	0.410			
Zygopetalum Mackayi Hook	24(?)		13	**
Subtribe Maxillarieae	0.1			
Ornithidium densum RCHB. f	24		**	0
Subtribe Oncideae		50-56		
Odontoglossum citrosmum LDL.		56 56	**	"
" crispum Ldl Oncidium bicallosum Ldl	14	90	13	**
, flexuosum	1.4	56	13	**
· r	28	50	**	19
Series B. Pleuranthae	20		**	"
Subseries a) Sympodiales				
Subtribe Phajeae				
Calanthe vestita LDL. var. Reg-				
nieri Veitch, (Calanthe Reg-				
mieri Rohb, f.)	20			
Subtribe Bulbophylleae	-20		3)	1,
Bulbophyllum saurocephalum .	20		**	
Subtribe C y m b i d e a e			**	,,
Cymbidium Lowianum Rons.f.	20		**	11
Subtribe Gongoreae			**	
Stanhopea insignis Frost	20		29	"
" tigrina Batem.			**	

ORCHIDACEAE (continued)	11	26.		
Subwibe Gongorene				
(continued)				
Gongora galenta Rohn, t. (Acro-				
pera Loddigesii Lvi)	20		HOFEMANN	. 1930.
Subscries b) Monopodiales				
Subtribe Sarcantheac				
2 Grex Apodostele				
Vanda tricolor LDL		15	4	13
, tricolor var. suavis	сн. 18		11	**
Sarcanthus rostratus LDI		40	*1	>>

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